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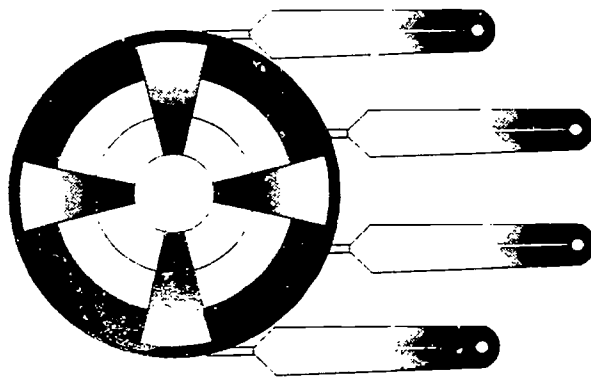
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## ABSTRACT

People generally learn best when information is presented to them in a culturally and socially relevant context or framework. This issue is addressed by the Science of Alcohol Curriculum for American Indians through the use of the Medicine Circle, a model that represents the concepts of wholeness, interconnectedness, and balance in a manner consistent with most Native traditional ideals. Also congruent with most American Indian cultures, the "new science paradigm" emphasizes: the observer as a subjective part of the observed universe; the dynamic nature of the universe; and nature as a network rather than a hierarchy. Intended for teachers and other educational personnel involved with American Indians, this unit studies the science of alcohol through the Medicine Circle's integration of physical, spiritual, mental, and emotional perspectives in conjunction with the values of the new paradigm. Upon completion of this unit, participants will have examined: (1) their own attitudes about alcohol and abuse; (2) Medicine Circle concepts; (3) typical roles assumed by children of alcoholics as coping mechanisms; (4) personal and cultural differences in perception; (5) the effects on American Indian students of culture-based learning experiences; (6) Indian students' unique reactions to a science lesson; and (7) paradigms and paradigm shifts, limitations of the current science paradigm, and similarities of the Medicine Circle and the new science paradigm. This unit contains a participant handbook, 60 references, 20 handouts and accompanying overhead transparencies, an evaluation form, and tips for a successful training session. (SV)

# Science of Alcohol Curriculum for American Indians (SACAI)



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Training Unit

## Bridging American Indian Culture and the New Science Paradigm

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SCIENCE OF ALCOHOL CURRICULUM FOR AMERICAN INDIANS:  
(SACAI)

BRIDGING AMERICAN INDIAN CULTURE AND THE NEW SCIENCE PARADIGM

TRAINING UNIT

AUTHORS: CECELIA JACOBS  
CAROLYNA SMILEY-MARQUEZ, PH.D.

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AMERICAN INDIAN SCIENCE AND ENGINEERING SOCIETY  
1085 FOURTEENTH STREET  
SUITE 1506  
BOULDER, CO 80302

## ACKNOWLEDGEMENTS

American Indian Science and Engineering Society developed SACAI in an effort to address the devastating effects of alcohol among Indian populations. The SACAI approach is based on the belief that all things are connected and that successful prevention and intervention programs for American Indian students must start with this philosophical base. This connectedness is consistent with the new science paradigm and is symbolized in the curriculum by the Medicine Circle.

Many concerned and dedicated people played a part in the development and completion of this project. The content of the Teacher Training units was developed with the insight and dedication of three SACAI site coordinators: Ruth Bradford from the Pine Ridge Reservation in South Dakota; Artley Skenandore from the Oneida Reservation in Wisconsin; and Mark St. John from Isleta Pueblo in New Mexico.

Norbert Hill, executive director of AISES, and Catherine Collier, Ph.D., developed the concept and wrote the FIPSE grant which funded the Teacher Training project. Special thanks are due Dr. Collier for ongoing direction and support. Roger Jackson, Jim Kettering, Ph.D., Barb Levin, Ph.D., and Dan Popov, Ph.D., contributed to the development of the project in its early stages. Cathy Abeita made significant contributions in getting SACAI organized and set up.

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Cecelia Jacobs  
SACAI Project Director

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## USING THE SACAI UNIT

SACAI has been developed for use by trainers who have a background in biological science. The material provided in each unit is based on current research; however, the field of alcohol studies is rapidly changing and trainers should be aware of new theories and developments published regularly. The bibliography at the end of each unit provides information that can be helpful in staying current in alcohol studies. Although SACAI is targeted to teachers from grades 4 through 12, the training audience can include anyone interested in how alcohol affects the normal functions of the digestive and central nervous systems. This can include counselors, school health professionals, administrators, parents, and community members. SACAI emphasizes information of particular interest to teachers of American Indian students and includes a culturally relevant approach to presentation methods and explanations based on the concept of the Medicine Circle.

The SACAI materials include Training Units and accompanying Participant Booklets. The following units are currently available:

Bridging American Indian Culture and the New Science Paradigm  
The Digestive System and Alcohol Use  
The Central Nervous System and Alcohol Use

It is strongly suggested that Bridging American Indian Culture and the New Science Paradigm precede the use of other units. This first unit provides a grounding in alcohol issues and discussion of the Medicine Circle which is used throughout the curriculum. The remaining units can be studied in any order.

Each Training Unit includes presentation material, handouts, overheads (paper and transparent copies), activities and a bibliography. A Participant Booklet also accompanies each Training Unit. (Additional booklets are available from AISES.)

### Training Unit

The Training Unit is presented in two columns. The left column, Presentation Background, contains the concepts and ideas to be presented. The right column, Presentation Notes, offers a variety of suggestions for engaging participants in the material. The Presentation Notes indicate when to use overheads, handouts, activities, or supplemental readings. These refer to and are associated with preceding paragraphs in the left column (Presentation Background). The Training Unit is designed so

the user may easily follow the text from top to bottom on each page, alternating from column to column. The space provided throughout the unit may be used for your notes and comments.

Presentation Notes contain the following items:

- 1) Supplementary Readings: These suggested materials can be used to expand and enhance your understanding of the subject. They are listed in Presentation Notes with a full reference in the bibliography at the end of the unit. Depending on the time available and the size and interest of your class, you can make the readings optional, assign various material to small groups, request summaries--written or oral--from individual participants, ask for contrasts and comparisons of selected readings, assign cooperative learning activities, etc.
- 2) Overheads: Following specific text, overheads are provided to facilitate the training. Many of these are included in the Participant Booklet as "handouts". When an overhead is included in the booklet as a handout for participants, it is indicated in the Presentation Notes. Paper copies of the overheads are provided in the Training Unit along with transparencies.
- 3) Stories: Some units include stories written by American Indian authors or adapted from traditional stories. Participants should be encouraged to learn the stories common to the communities in which they work and to include them when appropriate in the learning process. The text of the stories is located after the handouts and overheads in this unit and the accompanying Participant Booklet.
- 4) Notes: Notes are used to offer information related to the text or to provide cultural perspective or background.
- 5) Discussion: Throughout the curriculum, open-ended questions are offered as a means to explore the material or its implications more fully. Trainers are encouraged to use the space provided to add questions of their own.
- 6) Activities: Ideas for class participation are offered, particularly at the beginning and end of the units, as warm-up and closing or review exercises. Many of these activities can be adapted for use in participants' classrooms. (Additional activities adaptable to classroom settings are listed in the Participant Booklets at the end of each section).



## Participant Booklet

Accompanying the Training Unit is a Participant Booklet. Each participant should be given a booklet to facilitate the training. The booklet is divided into sections with discussion questions and activities following each section. The booklet also has pages for notes, a glossary of terms (when appropriate), and a bibliography. The content in the Participant Booklet is identical to that found in the Training Unit and it follows the same sequence. In addition to the activities and suggested readings found in the Training Unit, the Participant Booklet contains summary questions and training activities. These are designed to be used at the discretion of the trainer in conjunction with the activities found throughout the Training Unit in the Presentation Notes column.

## Tips for a Successful Training Session

The following items are suggestions to consider in order to facilitate a successful training session. These ideas reflect effective strategies found over many years of research and experience in providing in-service training to educators. Suggestions are made specific to this unit.

1. Adequate preparation includes familiarity with the content, overheads, handouts and other materials.
2. If possible, participants should be provided the Participant Booklet prior to the training so they may familiarize themselves with the content.
3. The more interaction participants have with each other, the more involved in the training they will become.
4. Take adequate time to complete discussions and activities to ensure that all participants understand the content. The time needed will vary across training situations.
5. Provide culturally relevant examples and/or experiences whenever possible and encourage the participants to share their related experiences.
6. Allow participants the opportunity to discuss how the unit's content may be applied to the classroom setting when teaching students about the effects of alcohol.

## TEACHING THE SCIENCE OF ALCOHOL: BRIDGING AMERICAN INDIAN CULTURE AND THE NEW SCIENCE PARADIGM

## Presentation Background

## Presentation Notes

## I. Teaching about Alcohol Through the Medicine Circle

The prevalence of alcohol abuse among American Indians is higher than among other groups in the U.S. Current information indicates that Indians have poorer health and are dying at far greater rates than the general U.S. population. Indian children run twice the risk of becoming alcoholic as do children from the general population (NCADI, 1989).

Public education has typically failed Indians due in part to inadequate recognition of Indian culture. For example, science education typically reflects a curriculum based primarily on an essentially mechanistic, reductionist view of the world. This system is not compatible with the holistic view held by many Indian cultures, nor with the new science paradigm which reflects a holistic view toward the study of science (Deloria, 1986). Teaching is most effective when it is presented in a context that makes cultural and social sense. People retain and use information which reaffirms those things they have already learned from their families, communities, and cultural and social heritage (Marable, 1990; J. Cummins, 1984).

Learning and teaching about the science of alcohol compounds the necessity for materials to be presented in a culturally relevant manner. This is due to the very personal reactions and responses that the topics of alcohol and alcoholism can generate. The instructor must, therefore, be prepared not only to teach about such things as the

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metabolism of alcohol through the digestive system and the effect of alcohol on neurotransmitters in the nervous system, but he must be prepared to deal with social and psychological effects of alcohol drinking habits as well. He must be sensitive to differing cultural values about alcohol use, and differing values about the personal or public nature of alcohol use.

### Presentation Notes

Handout 1: "North American Fruit Juice Producers' Survey"

Activity: The objective of this activity is to demonstrate through personal experience the emotional and social aspects of alcohol use. By answering and discussing questions about the use of two liquids commonly used in our society, participants are encouraged to explore their own and others' reactions in an environment of inquiry. They are challenged to transfer their experience into the classroom and to consider what students might experience when discussing alcohol use. The instructor's role is to establish an environment of inquiry which is **non-judgmental**, to maintain an objective, interested, attitude of curiosity.

Distribute the "Fruit Juice Producers' Survey" to every third person. Instruct participants to form triads for interviews and discussions. One member of the group interviews the other two members, making notes on the survey sheet. Encourage the interviewer to end

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### Presentation Notes

the survey by asking clarifying questions of the interviewees because he will use the information to introduce himself and members of the triad to the larger group. After several minutes, ask the interviewers to make the introductions using information gleaned from the discussion regarding the groups' fruit juice drinking habits.

Following introductions ask the interviewers to cross out the word fruit juice and write in the word alcohol. Ask them to interview their groups again. After several minutes ask the participants to discuss the following questions:

1) What were differences in reactions in the discussions about fruit juice drinking habits and alcohol drinking habits? 2) Were there differences in the feelings you had in asking, in answering, and in listening to the answers of co-participants during the discussion? 3) How would you feel about being introduced by your alcohol drinking habits? 4) Consider in what ways your responses would be similar to or different from those of your American Indian students.

**Supplementary Reading:** "How to Teach Objectively about Alcohol" from Teaching About Alcohol by Peter Finn and Patricia O'Gorman, 1989.

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There will be different levels of participation, certainly at first, when discussing alcohol use by individuals, in families, and in communities. There are factors that influence the participation level and openness of American Indian children. For example, questions might not always be asked. The tendency to ask questions is not as typical in many Indian cultures as in the euro-ethnic culture (Swisher and Deyhle, 1989). And sometimes the subject is so difficult to face that denial, silence and acting out will be the only "questions" the teacher hears. Sometimes, of course, questions and concerns will be expressed with varying degrees of frankness and openness. Teachers need to be able to respond to a full range of student needs.

Alcohol is often associated with family conflicts, abandonment, neglect, or abuse. Student reactions to these associations will vary widely depending on their personalities and experiences. Teachers need to be prepared, not with predetermined answers, but with well-thought-out attitudes and approaches.

It is important for educators to identify, clarify, and explore their own attitudes and feelings about alcohol and its use. They need to become aware of and comfortable with their own attitudes and drinking practices in order to respond with honesty to their students' needs and questions. Although factual information is important, students will be more influenced by a teacher's feeling about drinking and his ability to help them explore their feelings about drinking. In general, teacher attitudes and behaviors about alcohol are probably more important in affecting responsible attitudes among students than is knowledge of the facts about alcohol (Finn, O'Gorman, 1982).

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## Presentation Background

An important issue for teachers to consider is how to teach about alcohol without bias. A teacher may have very little experience with alcohol or she may have an alcohol problem herself. She may be an adult child of an alcoholic or a recovering alcoholic. She may believe that drinking is a sin or a sign of weakness and inferiority. Perhaps she grew up believing that the use of alcohol is a typical part of the daily routine. What does she offer in the classroom with respect to her attitudes when she presents information about alcohol? In an article titled "Teacher Training in Alcohol Education", Finn and O'Gorman suggest defining objectivity in terms of what can be comfortably embraced and easily put into practice. Examples of unbiased approaches follow:

- 1) Remain publicly neutral about personal opinions regarding alcohol in order to avoid encouraging students to parrot back what they think the teacher wants to hear. Try to stimulate students to express and explore their own attitudes toward drinking. This requires acceptance and trust in the students' processes.
- 2) Acknowledge your own ambivalence regarding some issues involving alcohol. Use this ambivalence to explore issues with students.

## Presentation Notes

Overhead 1: "Teacher Attitudes..."

Supplementary Reading: "Teacher Training in Alcohol Education: Goals, Approaches, and Content" by Peter Finn and Patricia O'Gorman in Journal of Drug Education, 1982.

Overhead 2/Handout 2: "Positions on Alcohol Use"

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- 3) Express opinions openly and honestly and encourage students to do the same (Finn, O'Gorman, 1982).

## Presentation Notes

### Handout 3: "Alcohol Discussion Questions"

**Activity:** Give participants some time alone or in small groups to define objectivity for themselves. Participants who wish to may share with the large group.

**Discussion:** Can you choose a position without believing other positions are wrong or less correct? How can you present in a balanced manner reasons why some people drink and others abstain? How can the attitudes of different religious denominations be discussed without bias? Should they be raised at all? Should you present, agree with, or have students research the pleasure many people derive from alcohol use?

**Role Play:** Ask several participants, each representing a different position on alcohol use, to answer typical student questions. Participants could have specific alcohol histories (being a drinker, recurring alcoholic, ACOA, abstinence based on religious belief, etc.) that they may or may not bring into the discussion with students.

**Note:** The use of the role play and the following handouts are for clarification of personal attitudes and values, not consensus. The handouts could be used in a variety of ways: small group discussions, journal topics, homework assignments, etc.



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## Presentation Notes

### Overhead 3/Handout 4: "Medicine Circles"

**Note:** The Medicine Circle is not a part of the symbology of many American Indian communities. When working with specific Indian communities, locate appropriate models for holism. The Medicine Circle appears in all the units.

Indian thinking does not typically have the quality of absolutism or polarization that exists in other cultures. The concentric circles of the Medicine Circle used in this curriculum represent the world, community, family, and individual as a dynamic, interactive whole.

The Medicine Circle is used throughout this curriculum to represent a holistic, contextualized interpretation of the world. Its message of balance and integration encircles and encompasses all of nature. It is more holographic than geometric, a sphere that is concentric and dynamic. The ancient symbol of the circle is found in some form in the symbolism of nearly every tribe in North and South America.

It is used to represent the dimensions of the interactions of human beings with themselves, with community, and with nature. There are four points on this circle representing relationships, such as: the four directions - east, north, south, and west; the four cardinal colors - white, yellow, red, and black; the four human races - white, yellow, red, and black; the four worlds of existence - vegetable, animal, mineral, and human; the four human environments - physical, human, self, and the unknown; the four dimensions of human understanding



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- physical, emotional, mental, and spiritual (Four Worlds Development Project, 1983).

### Presentation Notes

**Note:** The four dimensions of understanding an issue can be applied to science curriculum in such a way that holistic thinking is enhanced. The four dimensions are defined as follows:

Physical - the tangible world we perceive with our senses;

Spiritual - the innerconnectedness and interdependence of all of nature and the creator;

Mental - the experience of perceiving and processing information;

Emotional - the feelings generated in reaction to perceptions.

Distinctions in the symbol are made with lines; however, Indian appreciation for interdependence and recognition of co-existing realities blurs the distinctions which are artificially imposed by the lines.

For example, the liver has functions which are dependent on the pancreas, and interdependence is evident between and among all body systems. The nervous system interacts with the reproductive system and the digestive system, and these interactions are as important as the systems themselves.

In the holistic approach, each "part" is important because of its specific function and contribution to the whole. No part of the body and no element in

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the universe exists or functions independently. The applications of this approach are relevant to the study of alcohol in American Indian communities.

### Presentation Notes

**Discussion:** What is the value of looking at situations created by alcoholism and alcohol abuse from different points of view? What are examples of interdependence and connections which have been disrupted by alcohol use?

**Note:** The term "holistic" has suffered from overuse and commercialization in the last decade. It refers here to the perception of the universe as a series of interacting wholes. The emphasis is on complete systems rather than analysis of or dissection into parts.

In holistic systems, each aspect is important. If an individual's physical system is upset or damaged because of alcohol, she is also out of balance in other aspects -- mental, emotional, and spiritual. Just as she as an individual is affected, so is the family in which she lives. When families are out of balance, so is the community out of balance. When communities operate without regard for the mental, physical, spiritual, and emotional health of their members, the world experiences in that lack of harmony. The inverse is also true; when the community is healthy, that quality of health touches the individuals and families who make up that community and a healthy community affects the condition of all the world. Illness or wellness in any aspect of the Medicine Circle represents illness or wellness in all. Alcoholism is a disease that affects all areas, and concentric circles within the Medicine Circle including the family.

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## Presentation Notes

Alcoholism is often called the family illness, referring to the tremendous impact active alcoholics have on those around them. There is no way the family members can escape or ignore the alcoholic. The majority of the alcoholic's impairments are behavioral. So in the day-to-day interactions of family life, the family members are confronted with alcohol behavior, which initially may appear to have little connection to the drinking. The family is confused, bewildered, angry, and afraid. Because they act accordingly, their responses characteristically become as impaired as those of the alcoholic (Kinney and Leaton, 1987).

A recent contribution to understanding the effects of alcohol on the family comes from family systems theory. Central to this view, which is in harmony with the Medicine Circle model, is the belief that changes in any part of the system (any family member) affect all of the others. For example, if a parent begins to abuse alcohol, the rest of the family accommodates the drinking behavior in order to maintain a family structure and balance.

In American Indian families, particularly those on or near reservations, extended family interactions are frequently more integrated into the nuclear family than is typical of euro-ethnic families. The coping styles of children who deal with alcohol in their families apply to both the nuclear and extended families. Sharon-Wegscheider-Cruise, president of a South Dakota firm that works with alcoholics, has identified four roles that children of alcoholics tend to adopt that help them to function within the family:

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1) Caretaker or family hero takes on many of the responsibilities abandoned by the alcoholic parent. An overachiever, this child is always volunteering, very responsible and seems to be driven to be on top. He becomes his family's positive representative to the outside world. He is often a class leader. Sometimes he exhibits bossiness when dealing with other children.

2) Scapegoat is hostile and aggressive and uses negative behavior to gain attention. This child is more likely to have problems in school and to abuse alcohol and other drugs. Se tends to talk back, neglect work and form strong peer alliances. The scapegoat takes the focus away from the drinker.

3) Lost child shields himself from pain by avoiding close interaction with family members and others. Quiet and shy, he is rarely a problem at home or school and may for this reason get lost in the shuffle.

4) Mascot provides comic relief. Often hyperactive and immature, she will do almost anything for an attention-getting laugh. She is fun to be around and is able to use charm and humor to hide her insecurity.

While these roles appear with usual regularity, they are not always in place or they may overlap. By recognizing these behaviors, teachers can identify and offer support to children who might

Supplementary Reading: Adult Children: The Secrets of Dysfunctional Families by Friel and Friel, 1988.

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otherwise be misinterpreted or ignored. The teacher's role can be very influential in the lives of these children. The Medicine Circle can serve as a framework for the teacher in addressing the mental, spiritual, emotional and physical needs of students.

## Presentation Notes

Handout 5: "Identifying Children of Alcoholic Parents"

Handout 6: "Suggestions for Teachers for Supporting Children of Alcoholics"

Discussion: How can a family be compared to a mobile? How is the mobile greater than the sum of its parts? How does what happens to one part of the mobile affect the other parts? How is a mobile like a Medicine Circle?

## II. Points of Reference

### A. Personal Framework

Every person has a framework, a way of perceiving the world, that is unique. This perception is a composite of experiences, beliefs, values, culture, history, economics, language, etc. This framework or point of view is often challenged by new information and experiences, by exposure to other people's points of view, and by the need for reevaluation of beliefs and values. As a person grows and develops, so does the framework from which he knows his environment and his place within that environment. No one maintains exactly the same point of reference for long. And no two people ever have exactly the same perspective at a given point.

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**Note:** The alcoholics' perceptions tend to be stereotypic and static even in the face of new information. Alcohol inhibits perceptual growth. Denial of the influence of alcohol on the alcoholic is common.

**Overhead 4:** "Every Person Has a Unique Perception of The World"

A stream flowing through an open meadow looks very different to various creatures. A beaver, an eagle, a deer, a woman, a fish, all have different perceptions of the stream. Descriptions would be contextualized in their own experience. A fish's description of the world might include much more detail about that which is below and reflected by the surface of the stream. It might emphasize those elements important to fish's survival such as food and flow.

Deer and woman, similarly, might emphasize elements in a manner influenced by their point of view. They stand above the stream. They can see its path for some distance. Their perspective includes elements around the stream. Trees, plants and berries, a nearby road, and even an airplane overhead contribute to their perception of the stream. These things provide a context in which the stream is understood.

**Note:** The alcoholic is frequently stuck in a narrow perceptual framework. She resists change and tries to fit the world into a fantasy. She projects her limited perceptions onto others.

**Overhead 5:** "The Stream"

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Discussion: In what ways would the perceptions of deer and woman differ? In what ways would they be alike? Why might it be difficult for some of us to consider these questions? How does awareness of context influence perception?

Of course, deer's description and woman's description are organized differently because of their needs and relationships with the natural environment and because of their different perceptual apparatus.

But even two women would not understand, see, or know the stream in the same way. One might feel it is a part of her and the other might fear it.

One may think of it as a valued resource providing food and water for drinking, cooking, bathing or cleaning. She may consider it as recreational or a water route for travel by kayak or canoe.

Her counterpart may feel it is dangerous because of unknown and unpredictable creatures who live in and near it. Or perhaps her most salient reaction is to the danger of drowning there. Each person's beliefs about reality and their experiences are unique.

Consider how the women's points of view might differ if they were presented an abstraction -- an idea, a theory. Their perceptions would likely be even more diverse than if the object of discussion were tangible. For example, considering the subject of alcoholism might for one woman be an intellectu-

## Overhead 6: "Two Women"



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al exercise because she has had very little personal exposure to anyone who abuses alcohol. The other woman who might have grown up as a child of an alcoholic or whose children are perhaps experimenting with alcohol use might have a powerful emotional response.

These differences in perceptions of abstractions would likely be more difficult to discern than perceptions of tangible elements. Two people might know each other for a long time before they learn what each of them means by ideas such as alcoholism, social responsibility, commitment, biculturalism, happiness, openness, leisure, etc. The tendency of people to assume others share their exact definitions, concepts, ideas and experiences creates a lack of understanding and communication. A sensitive attentiveness to these differences is necessary for effective communication between any two people. This sensitivity becomes even more critical when communication is among people of different cultures. The teacher in the classroom cannot assume her students share her definitions or beliefs. This is particularly important for teachers of students who do not share her cultural background.

## Presentation Notes

Supplementary Reading: "The Sacred Hoop: A Contemporary Perspective" from The Sacred Hoop by Dr. Paula Gunn Allen, 1986.

Discussion: Is it possible or likely that people do not know what their own definitions of many of these concepts are? Can you give examples of two people learning they have different meanings for the same terms?



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Handout 7: "Woman A"

Handout 8: "Woman 1"

Overhead 7: "Woman A1"

**Activity:** Handout "Woman A" to half the class and "Woman 1" to the others. (Since this exercise would not work if the participants saw both handouts, they are not included in the Participant Booklet). After a few minutes collect the handouts and show the overhead "Woman A1." Ask students to describe what they see. Ask the woman's name, age, thoughts. Typically participants will see the woman they were conditioned to see by the handouts.

**Discussion:** What are some examples from science of an event or element generating a variety of interpretations. For examples, dinosaurs were warm blooded and cold blooded, nature is cooperative and competitive, light is a wave and a particle.

**Supplementary Reading:** "The Power of a Paradigm" from The Seven Habits of Highly Effective People by Stephen R. Covey, 1989.

### II-B. Cultural Framework

All human beings grow up in a cultural context. Culture is the integrated pattern of knowledge, beliefs and behavior that influences the way a group of people respond to their environment.

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Honest and sincere men ... continue to fail to grasp the true significance of the fact that culture controls behavior in deep and pointing ways, many of which are outside of awareness and therefore beyond the conscious control of the individual (Hall, 1983).

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Handout 9: "Letter Written by An Indian Parent"

Handout 10: "The Two Worlds I Live In"

Discussion: What are the implications of Hall's statement? What does this say about a non-Indian teacher in a classroom with Indian children?

## 1. Cultural Interaction

Culture is unique from group to group. It is not learned consciously (unless one enters an unfamiliar culture and had to learn how to function there). Each person is born into a full, rich environment and, as Piaget suggests, each comes to understand the culture he is born into in more and more complex ways. The process of learning one's culture is called enculturation and may actually begin in the womb. A fetus can hear sounds before birth in the womb. He begins to perceive volume, rhythm, tone and timbre and associates different patterns as distinct from others. Children are enculturated into the patterns of a particular culture by interaction with parents, siblings, and other members of the family who play a significant role in their formation.

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Adapting to a different culture is called acculturation. Acculturation is the process of adaption to a new cultural environment through which people pass when they move from one culture to another (Padilla, 1980). Acculturation requires the contact of at least two autonomous groups; there must also be change in one or the other of the two groups which results from the contact. Typically, one group dominates the other and contributes more to the flow of cultural elements than does the other (Collier, 1985).

This domination has taken place in a variety of ways, for, as Parkman (1867) has noted, "Spanish civilization crushed the Indian; English civilization scorned and neglected him; French civilization embraced and cherished him." But in each case, a clear domination of indigenous life resulted (Padilla, 1980).

**Supplementary Reading:** "A Comparison of Acculturation and Education Characteristics of Referred and Non-Referred Culturally and Linguistically Different Children" by Catherine Collier, 1985.

**Overhead 8/Handout 11:** "Some Effects of Acculturation"

Before using this overhead, you may want participants to imagine they are studying in a different culture and language. What might be the effects of being in such a situation on their ability to learn? Notice whether anyone mentions positive short-term effects.

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Domination of one group over another suggests resistance and conflict. Groups do not lightly give up valued features of their culture. Teachers in classrooms with children from American Indian cultures should be aware of the conflict their students may be experiencing due to acculturation.

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**Note:** The effects of acculturation can easily be misinterpreted by classroom teachers. Children sometimes react to a new culture with behaviors that look like handicapping conditions. Minorities are over-represented in special services and special education programs. Appropriate placement for many of these students might be in cross-cultural counseling or instructional programs (Collier, Hoover 1987).

**Overhead 9:** "Cultural Differences in Interpretation"

**Overhead 10:** "Responding to Two Cultures"

This overhead illustrates an example of conflicts students interacting in two different cultures might experience. The use of eye contact varies among cultures.

**Discussion:** What do these two overheads tell you about what Indian students might experience at school? How can a teacher influence this experience if he doesn't know what the student is experiencing? Can a teacher always know what students are experiencing?

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Like the two women at the stream, teacher and students may experience the process in the classroom very differently. If the teacher is able to gain an appreciation for this, less of the students' energy might be needed for adaptation and more energy may be available to enjoy learning. (This is the case for students from the euro-ethnic culture as well).

Of course, the classroom is not the only place acculturation occurs. In today's world, the media plays a major role in acculturation. Television, movies, radio, magazines and newspapers influence our perception of our environment and change our cultures. Batman and Dick Tracy t-shirts can be found in Alaskan villages, on reservations and in New York City. The voice of national radio and television is the same in Houston and Miami. To various extents, both enculturation and acculturation shape the identities of modern Americans (Collier, 1985).

Despite long term efforts of the government of the United States, American Indian communities have tended to remain identifiable as distinct groups. Partly because of the social and economic isolation of many reservations, acculturation has not been without conflict for Indian individuals, families and communities. The conflict many American Indians experience results in feelings of disenfranchisement and alienation, sometimes from both cultures. Alcohol is sometimes used to provide temporary relief from these feelings.

Alcohol and drug abuse serve the superficially useful function of dulling the pain, of clouding our vision so that we need not be confronted in every dimension of our lives

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with the frightening truth that we have nearly forgotten how to survive in this land (Four Worlds Development Project, 1983).

Frequently, when children from reservations attend school they experience cultural discontinuity. Indian children are reared within the context of their home cultures where traditional Indian language and values may exist in various ways and experiences. They start a socialization path (enculturation includes socialization) that begins with the attitudes, values and beliefs of their home cultures. Schooling traditionally promotes a monocultural view of the world. American history is presented as though it exists for euro-ethnic males, for example. If the school and its classroom experiences ignore their home culture, then their socialization path is discontinued, disrupted, perhaps abruptly. These children begin to feel inadequate and unappreciated. They spend the school day ill at ease in an unfamiliar world. The message they hear is, "You do not fit. You do not belong. You should be different...."

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**Supplementary Reading:** "Our Voices, Our Vision: American Indians Speak Out for Educational Excellence" by the American Indian Science and Engineering Society and The College Board, 1989.

**Discussion:** What do you recall from your experience as a student regarding illustrations on classroom walls, pictures in books, songs, heroes or heroines? How were American Indians portrayed? (Noble savage, redskins, scalpers, vanishing, spiritual, Tonto, animals...) Discuss how "noble savage" is a negative description.

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So even if they begin, as every child does, learning how to make sense of this world, how to gain skills and knowledge that allow them to function in their home culture, the school experience can undermine the confidence learned at home. If the school and the classroom experiences do not accommodate these Indian children's cultural backgrounds, more suffering than learning will take place there.

For example, the euro-ethnic culture in the United States supports individual competition and individual accomplishment over group cooperation and group success. In most American Indian communities, individual competition is not a traditional value. When a teacher does not understand this and sets up an atmosphere of individual competition within the classroom, frustration, fear, insecurity and confusion among Indians students can be the result.

...on the basketball court... they are competitive as can be. But in the classroom

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Discussion: What were Sitting Bull's motivations for backing Indian nations in the Battle of the Little Big Horn? What were his experiences leading up to the battle? What do you know about the struggle of Chief Joseph? Why is he considered an honorable man? If you do not know the answers to these questions, why not?

Note: Many American Indian cultures have activities as groups rather than as individuals. For example, Eskimo villages compete among each other but individuals are not identified as heroines or heroes.



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they don't want to compete against each other. I can ask a question and when a student responds incorrectly no other student will correct him. They don't want to look better than each other or to put another student down. The Anglo students are eager to show that they know the correct answer. They want to shine; the Indian students want to blend into the total class. (Swisher and Deyhle, 1989)

Typically, American Indians believe that people share a great deal with all other creatures in the universe. People belong to the universe. They have an integral place within the world. They are at home in this universe. Human beings have more in common with other human beings than with the universe at large. They are more like each other than they are like plants, rocks, or fish. They share humanness with fewer creatures. This shared humanness includes the capacity for language, humor, and sexual and social relationships.

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Supplementary Reading: "Learning through Cooperation and Sharing" from Teaching the Native American by Hap Gilliland and Jon Reyhner, 1988.

Overhead 11/Handout 12: "Each Person is Like..."

This overhead can be seen as a continuum within a circle. It illustrates ways in which individuals are like all other elements in the universe and ways they are unique. American Indians traditionally believe that all things are related and part of a whole. The outer circle represents this interconnected-



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ness. Moving inward, the next circle symbolizes all that we share with humanity. As the circles become smaller our connections are stronger until the individual, in some ways unlike anyone else, is at the center. The concepts of nature and nurture also fall along this continuum. The influence of nature falls toward the outer circle and the influence of nurture toward the inner circle.

Cultural associations affiliate peoples with a more limited group. Specific language, senses of humor, values, assumptions, and behaviors are more closely associated with those who share a culture than with those who do not. The particular language(s) spoken, the expectations of themselves and others and even the way they greet each other identifies an affiliation with a particular culture.

## Story 1/Handout 19: "Hopi Creation Story"

(Stories are located after the handouts at the end of this unit and after the handouts in the Participant Booklet).

**Activity:** Read "Hopi Creation Story" and discuss the following questions:

- 1) How does the Hopi Creation Story relate to the overhead, "Each Person Is Like..."?
- 2) Where does the Hopi story place human beings in the natural world? Where does the Christian story place humans?
- 3) What does the command,

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"Go forth and have dominion over the creatures of the earth," mean to the self concept of Christians? 4) What would be the benefit to a teacher knowing the creation story of the cultural groups she teaches?

## 2. Shared Pan-Indian Culture

American Indians share a common culture on one level and have unique cultures on another. There are over 300 different tribes or groups of American Indians in the U.S. (The Task Force on Women, Minorities and the Handicapped in Science and Technology, 1989). Throughout American Indian history, there have been cross cultural contacts allowing for miscegenation of blood and culture. The values, practices and beliefs that are common among the majority of tribes and groups can be referred to as Pan-Indian.

The Pan-Indian perspective is a traditional ideal which includes ways of being in the world that assume that all of nature is alive; a singular unity that is dynamic, aware, and interactive. It is characteristic of American Indians to value harmony and balance, both individually and collectively. At what might be called an intuitive level, they experience themselves within the whole of nature.

...the primary assumptions tribes people make can be seen as stated only in that these people acknowledge the essential harmony of all things and see all things as being of equal value in the scheme of things... (Allen, 1986).

Overhead 12/Handout 13: "Perspectives of Nature"

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Indian people, to the extent that they are influenced by their traditional culture, do not experience the opposition, dualism, and separateness that characterize non-Indian thought. Traditional Indians, often even Indians who have been influenced by Western religions, assume themselves to be a part of a responsive and creative universe.

Often within the euro-ethnic culture there is a tendency to be one thing or another; for example, Christian or not, Democratic or Republican. The traditional Indian typically identifies with family and tribe or group. With the solidarity of that connection there is a confidence that allows for flexibility. This promotes a tendency to synthesize elements rather than choose between them. Change is seen as a constant and integration is a natural process.

This is important information for the science teacher in an American Indian classroom since formal science examines the world through a process of separation, isolation, and dissection. This results in a description of the parts of things

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Handout 14: "Learning Style Comparison"  
This handout can be used in a variety of ways: discussion, homework assignments, ask participants to write descriptions of classroom experiences from an American Indian student's point of view based on some of the information provided. Or, ask them to imagine themselves as non-Indian students in an Indian classroom with an Indian teacher. They can write visualizations focusing on the integrated components of the Medicine Circle.

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rather than the whole. From this perspective, functions are seen as mechanical. For example, the digestive system is typically described as a production line. Food passes through the alimentary canal, items are added the food is changed physically or chemically until the final product, energy, is produced and the by-product, waste, is eliminated.

Traditional Indian biological science and teaching respect the environmental context of the living organism. This allows for "knowing" an organism as it interrelates with the whole. Dissection, apart from food preparation, does not occur in this system of thinking.

This is not to say that all Indian children will be uncomfortable with dissection. Those who are may not know why they are. As Edward T. Hall noted, sometimes the role of our culture on our behavior is outside our awareness. The suggestion here is not to freeze Indian students in time by saying: "you do not dissect things because you are an Indian!" It is, instead, to understand why this experience might be more alien to Indian students than to non-Indian students and to help them bridge the gap between cultures.

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Overhead 13: "Holism -- Dualism"

Note: Ask participants to add more examples of the contrast between holism and dualism. Point out the fact that dualism can be considered part of holism.

Supplementary Reading: "Traditional Technology" by Vine Deloria in Winds of Change, 1990.

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If a lesson dealing with frogs is presented to Anglo and Native American students, their subjective reactions (positive and negative) to touching a frog will be derived not only from their individual personalities but from their cultural backgrounds as well. Beyond the rather specific issues of frogs, students from traditional Native American backgrounds might be more inclined to see scientific processes from a holistic point of view while students from mainstream Anglo-American backgrounds might be more interested in breaking down the subject into its smallest components (Ovando, 1988).

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Story 2/Handout 20: "Preparing for a Sing"

Ask participants to look for ways to tie the implication of this story to the presentation background information.

Activity: Read "Preparing for a Sing" and discuss the following questions:

- 1) How can a teacher prepare Indian students for classes in which animals are dissected?
- 2) What ideas, techniques can be used to emphasize a holistic approach?

Like any other children in a classroom, Indian children need teachers who respect their individualism and understand their culture and background. Respect and understanding do not come easily when teachers are not members of the cultural group to which their student belong, but they can be developed through the use of cultural relativism as a teacher's guiding ethos (Garcia, 1988).

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Overhead 14/Handout 15: "Cultural Relativism and Ethnocentrism"  
Sensitivity to and acceptance of cultural difference can be combined with a sense of pride in one's own heritage. Either position can be carried to an extreme but a balance between cultural relativism and ethnocentrism can contribute to healthy individuals and healthy relationships.

### 3. Cultural Relativism

Teachers who are aware of cultural differences manifested in the way their students learn and behave can support the learning of those students more effectively than teachers who only view cultural groups from their (the teacher's) perspective. Cultural relativism can provide a climate of acceptance for the cultures of Indian children. In addition, it allows teachers to approach a new culture with an open mind. Without it, teachers are likely to approach a new culture through their own cultural biases.

Handout 16: "Cultural Relativism" by Elmer Miller, 1979.

Activity: Read "Cultural Relativism" and discuss the following questions:  
1) What are typical ways in which a lack of cultural relativism is displayed among tourists, students, teachers, missionaries, movie producers, historians, parents, others? 2) What does the Handout "Cultural Relativism"

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imply about our ability to practice cultural relativism? 3) Why would it be challenging? 4) How is ethnocentrism related to racism?

**Supplementary Reading:** "Linguistic Reflection of Wintu Thought" by Dorothy Lee in Teachings from the American Earth, 1975.

Cultural relativism takes the attitude that cultures are different but not necessarily inferior or superior. Actually, cultures differ because groups of people develop them to accommodate unique ecological, demographic, and economic situations. Cultural relativism necessitates that we perceive cultures from their unique perspective rather than from the perspective of the euro-ethnic male, middle-class American culture, the cultural viewpoint most common in schools.

All too often we tend to view other cultures from the viewpoint of our own culture. Using our own culture as the standard or model, we compare other cultures to our own culture.... Cultural relativism asks us to view other cultures from their viewpoint, and when they differ from ours, they merely differ. They are not to be perceived as superior or inferior... (It) can provide a climate of acceptance for the cultures of Indian children (Garcia, 1988).

This curriculum presents science concepts in the context of Indian culture. This will probably seem new, and in some cases peculiar, to non-Indian educators. Patience and openness will be required. The feelings and reactions associated with this



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experience should be remembered so that when teachers enter classrooms with children from Indian communities, they will be sensitive to their feelings and reactions to new models and frame works. To teach from an American Indian cultural context requires teachers to acculturate in a manner that is similar to the way that American Indians acculturate to non-Indian culture. The experience this curriculum provides will help teachers realize the extent to which classroom materials are a reflection of the euro-ethnic culture; how the way teachers teach reflects a style acceptable to the euro-ethnic culture; how assumptions about what students already know and how they learn best reflects the euro-ethnic cultural perspective. There is, of course, nothing wrong with the euro-ethnic cultural perspective. It is just not the only perspective. Both euro-ethnic and Indian perspectives (and by extension, all other cultural perspectives) are valued in these presentations and discussions. Formal science and traditional Indian perspectives come together for the benefit of people who represent both.

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Supplementary Reading: "Coyote's Eyes: Native Cognition Styles" by Terry Tafoya in Journal of American Indian Education, 1989.

This reading starts with a story which could be read to participants and discussed as a separate activity.

Handout 17: "Teaching Children Science: An Inquiry Approach" by Louis Kuslan and Harris Stone, 1972.



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**Activity:** Ask participants to respond to the Handout 17 from the point of view of a traditional Indian; a non-Indian.

**Supplementary Reading:** "Enlighten My Mind: Examining the Learning Process Through Native Americans' Ways" by Paul Marashio in Journal of American Indian Education, 1982.

Classrooms today are filled with a wide variety of students who reflect world views different from each other and different from their teacher. An openness and appreciation of this variety can be challenging both personally and professionally. The personal challenge comes in examining beliefs about cultural differences and facing prejudice. It is not easy to look for ways in which the lack of cultural relevance might surface in the classroom. This curriculum is designed to make that experience possible and to offer alternatives.

In general, educators have not learned from their experience as students in schools how to teach other cultures. Classrooms, from kindergarten to postgraduate, reflect the euro-ethnic culture. It is only recently that some institutions of higher education have begun to respond to the needs of a multicultural population. All too frequently, there is not any support for teachers reaching for a cultural balance in their classrooms. It is important that this be acknowledged and that the effort to bridge the gap between cultures not be minimized. It is also important to look forward to the "aha!" that will accompany the challenge of looking for answers in new places. Cultural relativism can be a key to a treasure chest of solutions and answers to situations that previously brought only

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frustration to students and teachers alike.

### III. Paradigms

We know that beliefs about the world have changed over time. People used to think that disease was caused solely by sin. Epileptic seizures were considered to be demonic expression. Mental illness was considered to be communicable. The religious leaders, medical practitioners, philosophers, and scientists of earlier times behaved in ways based on those beliefs. Every theory, every plan, and every activity, was influenced by those beliefs.

The history of science, which is based on Newtonian mechanics, explains the universe as an immense and complicated machine. Its behavior can be understood by reducing wholes to parts.

During the last three centuries, euroethnic science has been dominated by the Newtonian-Cartesian system of thought, based on the work of the British scientist, Isaac Newton and the French philosopher

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Discussion: Explore with participants the idea that "I wouldn't have seen it if I hadn't believed it." If you own a red Escort and I don't, why do you see more red Escorts on the road than I do. Which of us is right?

### Overhead 15: "A Synapse"

This overhead illustrates a synapse between neurons. In what ways does it imply that the body is a machine? How can teachers use this kind of illustration and incorporate the concepts of the Medicine Circle?

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Rene Descarte (Grof, 1985). This model or paradigm offers explanations of non-living as well as of living things. Many of us can recall discussing our body as "a marvelous machine," our brain as a computer, and our digestive processes as analogous to an assembly line.

Based on this paradigm, even human nature has been reduced to the functioning of instincts and representations which are simply electrochemical reactions of the nervous system (Peat, 1988). In fact, Pierre Laplace, a 19th century mathematician, predicted a day when a single mathematical formula would be found from which everything in nature could be deduced (Briggs and Peat, 1984).

## Overhead 16: "Pierre"

For the past twenty years, the terms paradigm and paradigm shifts have been associated with the work of Thomas Kuhn, a physicist and science historian who wrote The Structure of Scientific Revolutions. (Kuhn, 1970a).

Kuhn used the term "paradigm" to describe a general organizing principle which governed perception. It can be viewed as a "map" which predetermines not only WHAT scientists (and others) can see, but HOW they are supposed to see it. He defined a scientific paradigm as a constellation of achievements, shared by a scientific community and used by that community to define legitimate problems and solutions.

Broadly construed, a scientific paradigm is a set of explicit or implicit presuppositions or basic beliefs which are held by scientists and others to provide coherence to the picture they hold of the

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world and of how it works.

A paradigm has a powerful influence on perceptions and interpretations of facts and events. This influence is usually not noticed except when confronted with other paradigms; it is taken for granted and rarely questioned. It is handed down from one generation of scientists to the next. It is difficult to change and it is difficult for its proponents to accept another view.

A paradigm can be compared to a pair of glasses. They are used to increase visual ability, but are rarely considered by the wearer as part of the view, even though they clarify, enhance, limit, and even color perceptions.

Scientists who accept the current paradigm, tend to think of themselves as objective observers, but this is not the case. In describing the world, they describe themselves. They see the world, not as it is, but as they are, or as they are conditioned to see it, according to their reality which is influenced by education, culture, history, experience, etc.

Supplementary Reading: "Naskapi: Dreamers of Labrador" from Synchronicity by David F. Peat, 1988.

Overhead 17: "Fish Reflecting On Water"

Discussion: Ask participants for examples of ways in which our descriptions of the world involve ourselves. Using the example of an alcoholic, demonstrate ways in which alcohol colors every perception.

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### A. Current Paradigm

The current scientific paradigm assumes that there is an objective universe which can be explored wholly by methods of scientific inquiry, and which can be approximated, progressively more precisely, by quantitative models.

Discussion: What are acceptable methods of scientific inquiry? What is not considered acceptable as a method of scientific inquiry?

It assumes too that what is scientifically "real" must take as its basic data only that which is physically observable. This is the positivist methodology informing the "scientific method."

This paradigm ascribes to the reductionist assumption of explaining complex phenomena in terms of more elemental events. This scientific view requires the reduction of all organic and non organic matter into basic components and their actions and reactions on the earth to the most basic explanation (Harmon, 1988).

"Using the scientific approach, any phenomenon could be isolated and analyzed under repeatable conditions until even the most complex of processes were reduced to a collection of known elementary units acting predictably as a result of the forces between them" (Peat, 1988).

In general, the pervasive definition of how the world works has been a pragmatic and mechanistic

Overhead 18: "Reductionist View"

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one: (1) what is real is both discernible to the physical senses and is measurable; (2) the natural world is made up of "parts" which work together like a "machine"; (3) nature can ultimately be explained in terms of elementary happenings--there are primary building blocks on which all phenomena are based; and (4) there is an absolute reality, pragmatic and objective. This view made for a rational science which was distinguished by its lack of individualistic/subjective intervention or acknowledgement. This definition and the accompanying perspective have been very useful in scientific research, experiments, and studies. Modern research using the current paradigm has fostered growth in the theoretical, applied and practical including technological areas of all scientific disciplines.

## B. Paradigm Shift

Beginning around the turn of the century, scientists and nonscientists began to consider the possibility that the paradigmatic frame of current science was too narrow to accommodate observed anomalies in the human experience. Anomalies which question the ability of a paradigm to order and give meaning to the world are the first stage of a paradigm shift.

**Discussion:** How has the current paradigm been successful? In what ways has it been incorporated into everyday life. How and why has it been accepted by non-euro-ethnic cultures?

**Discussion:** What are examples of reality that do not fit the current paradigm? Are there other paradigms that deal with reality in a different way?

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Stanislav Grof, author of Beyond the Brain, noted:

Newtonian-Cartesian science has created a very negative image of human beings, depicting them as biological machines driven by instinctual impulses of a bestial nature. It has no genuine recognition of higher values, such as spiritual awareness, feelings of love, aesthetic needs, or sense of justice. All these are seen as derivatives of base instinct, or compromises essentially alien to human nature. This image encourages individualism, egoistic emphasis, competition, and the principle of "survival of the fittest" as natural and essentially healthy tendencies. Materialistic science, blinded by its model of the world as a conglomerate of separate units, has been unable to recognize the value and vital importance of cooperation, synergy, and ecological concerns (Grof, 1985).

Overhead 19: "Biological Machine Driven  
By Instinctual Impulses"

Vine Deloria, J.D., Professor of American Indian Studies at the University of Colorado, says of this reductionist view of the universe:

We can look at phenomenon with a completely rational and objective eye and find abstract principles underlying all behavior from atoms to masses of people. This perspective implies, of course, that the natural world and its inhabitants are wholly materialistic and that even the most profound sentiments can be understood as electrical impulses in



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the brain or as certain kinds of chemical reactions. We have arrived at this state of affairs through the application of a methodology of reductionism, a tendency to divide, subdivide and subdivide again in order to find the constituents of an entity or event (Deloria, 1990).

Other scientists have observed that, in adhering to the current scientific paradigm, they are missing something important, namely, that consciousness and conscious awareness are causal realities acting on our experience of the world--that, like it or not, there is a subjective element to our sciences. Morris Berman, in The Reenchantment of the World describes the loss of our belief about the interconnectedness and co-participation of living and non-living things in our world as a loss of enchantment.

At least in theory, the reference points for all scientific explanation are matter and motion - what historians of science refer to as the "mechanical philosophy." That mode can best be described as disenchantment, nonparticipation, for it insists on a rigid distinction between observer and observed. Scientific consciousness is alienated consciousness: there is no ecstatic merger with nature, but rather a total separation from it. Subject and object are always seen in opposition to each other. I am not my experiences, and thus not really a part of the world around me. The logical end point of

Supplementary Reading: "The Longest Road" by Richard Simonelli in Winds of Change, 1989.

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this world view is a feeling of total reification: everything is an object, alien, not-me; and I am ultimately an object of, an alienated "thing" in a world of other, equally meaningless things. The world is not of my own making; the cosmos cares nothing for me, and I do not really feel a sense of belonging to it. What I feel, in fact, is a sickness in the soul (Berman, 1984).

It is critical to recognize that to various degrees we have inherited this particular world view. It has had a profound effect on our whole lives: it guides our thinking and sorting, it permeates our attitudes about self, others, community, society, government, and human relationships, and it persuades us to believe that every adverse situation can be analyzed and every problem can be isolated and that there is an answer--one right answer--for everything that acts on us. It reaches beyond our intellectual defenses and effects our faith in the tangible and in the intangible. It orders time and nature in a way which can be manipulated, mined and altered.

The reductionist perspective offers the possibility of primary and definitive explanation for the basic

## Presentation Notes

Discussion: What are the implications of this kind of thinking? How is it related to the manner in which American Indians are perceived by euro-ethnic people. How might the abuse of alcohol be related to the current paradigm?

Supplementary Reading: "The Relativity of Wrong" by Isaac Asimov in The Skeptical Inquirer, 1989.

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mechanics of the universe, the solar system, even human genetics. It has been applied to the continuous motion of fluids and thermodynamics and to systems and processes within the human body and mind. It was the moving force behind the progress of the natural sciences of the 18th and 19th centuries (Grof, 1985).

There is considerable adherence to the current paradigm in the scientific community, to be sure, but there are others who believe that there is a randomness to reality, a chaotic and erratic unpredictability, that exists before and beneath the order which we have imposed upon it through our academic definitions and that can only be understood through a subjective, personal, and intuitive relationship with nature, self, and community.

Fritjof Capra, author of the Tao of Physics and The Turning Point, describes the current paradigm as viewing the universe as a mechanical system composed of elementary building blocks. The body is seen as a machine. Life is a competitive struggle, and unlimited material progress is an inalienable right. He said, "During recent decades, all of these assumptions have been found to be severely limited and in need of radical revision" (Capra, 1987).

Max Weber, in his classic essay, "The Protestant Ethic and the Spirit of Capitalism", says of scientists in the current paradigm, that they are

Supplementary Reading: "Modern Physics: A Path with a Heart?" and "The New Physics" from The Tao of Physics by Fritjof Capra, 1983 and; "Prologue" from Chaos by James Gleick, 1987.

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"Specialists without spirit; sensualists without heart; this nullity imagines that it has attained a level of civilization never before achieved".

If "living systems," said Berman in Reenchantment of the World "are in principle reducible to inorganic matter: nature is ultimately dead" (Berman, 1984).

## Presentation Notes

## Overhead 20: "The Cell"

It is generally held that anything less complex than a cell is not alive, therefore, the current paradigm would describe most of nature as dead.

**Discussion:** Do you believe that it is possible to determine the difference between living and non-living systems? How might the current and new paradigms vary in their descriptions of life systems?

Capra, says of the reductionist interpretation that "We are trying to apply the concepts of an outdated world view. The mechanistic world view of Cartesian-Newtonian science applies to a reality that can no longer be understood with these concepts". He suggests that what we need, then, is a new paradigm, a new vision of reality. He suggests a change for formal science that embraces concepts that are an integrated part of American Indian culture. In a tangible sense, the Medicine Circle is replacing the machine.

**Supplementary Reading:** "The Role of Physics in the Current Change of Paradigm" lecture given by Fritjof Capra, 1987.

# TEACHING THE SCIENCE OF ALCOHOL: BRIDGING AMERICAN INDIAN CULTURE AND THE NEW SCIENCE PARADIGM

## Presentation Background

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Overhead 21: "Paradigms and Paradigm Shifts"

Discussion: Consider the shift in paradigms in the field of alcohol abuse treatment from the "moral model" (alcohol abuse associated with moral degradation) to the "medical model" (alcohol abuse associated with disease). How can a holistic model enhance the "medical model"?

## C. New Paradigm

A new paradigm is emerging. It is holistic and recognizes the fundamental interdependence of all phenomena and the embeddedness of individuals and societies in the cyclical processes of nature. It is consistent with the philosophy and cosmology of American Indian traditions (Capra, 1983). People are beginning to question the strategy of manipulation and control of the material world and turning within themselves for answers (Grof, 1985).

In a fundamental sense which many people in science do not yet recognize, the theories of Albert Einstein's work challenged the absolute status of space, time and matter and his major contribution was to reduce the absolute nature of these ideas to a relative status--he introduced the context into modern science in a way that could not easily be refuted. But the importance of relativity for traditional thinking is that it began to shift the focus from the absolute materialistic framework science had constructed to an idea that things are related. Not many people in the academic community have yet applied this idea to the world as a total-

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ity and certainly many of them would rebel at the idea that science is shifting significantly toward a tribal understanding of the world. They continue to believe that relativity means that there are no absolutes. In fact, it means that things are related in some fundamental ways that had previously been excluded (Deloria, 1990).

## Presentation Notes

**Supplementary Reading:** "Quantum Leap" from Looking Glass Universe by John Briggs, 1984.

**Overhead 22/Handout 18:** "Axioms about Current Paradigm and Emerging Paradigm"

**Discussion:** Consider the concept of relativity from two different points of view: 1) All things are related and, 2) All things are relative.

**Supplementary Reading:** Gaia: A New Look at Life On Earth by J.E. Lovelock, 1987.

Today, the reductionist paradigm of formal science is being examined by scientists. The observers are taking off their glasses and looking at the glasses themselves. They are recognizing that there is a cultural, subjective, predeterminate aspect to science.

**Activity:** We have all had personal experiences in which our "view of the world" (our paradigm) has been shaken. Perhaps this had to do with the death or illness of a close friend or relative, the birth of a child, a religious experience, visiting another country or

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### Presentation Background

When glasses serve their purpose, the wearer doesn't think about them. But when something doesn't "look" quite right, attention is drawn to them. They may simply need cleaning, or the wearer may, in fact, need a completely new prescription. The reductionist paradigm, the current paradigm, doesn't look quite right to contemporary scientists. New scientific scenery is out of focus when one depends only on the old lenses.

The seeds for change were themselves born out of science, of course. Recent discoveries in cell biology and genetics, for instance, reveal an astonishing autonomy, a strange molecular freedom of action at a cellular and subcellular level which makes a mess of mechanistic theory. As Watson says in Lifetide, "It is a wonderful mess because it demonstrates, just when we needed reminding, that we and our life systems are very much more extraordinary than many will allow" (Watson, 1979).

We are learning that there are realities which exist beyond rational existence. There is a pulse of life that is understood only through the intuitive, through creative insight, through a deliberate intimacy of the human observer with nature.

### Presentation Notes

any number of ways our safe, secure personal paradigm may be called into question. Discuss with a partner or small group one of those times in your life and your subsequent responses and reorientation.

### Overhead 23: "Scientist Looking At His Glasses"

Supplementary Reading: "Notes of a Fringe Watcher" by Martin Gardner in Skeptical Inquirer, 1990.



## TEACHING THE SCIENCE OF ALCOHOL: BRIDGING AMERICAN INDIAN CULTURE AND THE NEW SCIENCE PARADIGM

### Presentation Background

One scientist who demonstrates a holistic approach is philosopher-biologist, Barbara McClintock. She points out about the plants she studies, that

no two plants are alike. They're all different, and as a consequence, you have to know the difference. I start with a seedling, and I don't want to leave it. ... One must understand how it grows, understand its parts, understand when something is going wrong with it. You need to have a feeling for each individual plant. (Keller, 1983)

She describes her appreciation for the uniqueness of each plant as a "feeling for the organism". It was from her conviction of the "oneness of things" and her personal emotional involvement with the science that McClintock began to study the mystery of genetic organization--seeing the way in which the cytoplasm, membranes, and DNA are integrated into the single structure of the cell nucleus. As a result of her passion and reverence for nature, she has been persistent in her synergistic approach to science.

Congruent with the Medicine Circle, a holistic paradigm centers on relationships and connections beyond the physically observable.

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Supplementary Reading: "Physics as the Paradigm" from The New Biology by Robert Augros and George Stanciu, 1987.

Discussion: How does this attitude reflect the Medicine Circle?

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Non-Indian science has recently come to acknowledge that natural organisms have, in addition to a form of order that can be observed and documented, many qualities that can only be seen through intelligent belief. There is much that exists which scientists have only begun to describe and understand and the mental strategies which are being used are more and more similar to Indian science.

### D. The New Paradigm and American Indian Culture

As the Medicine Circle demonstrates, there is not a hierarchical structure to Indian science. The knowledge, intuition, and practices engaged by Indian science are noncompeting and cooperative. They are interrelated and interdependent. There is, however, to a lesser extent than in the non-Indian community, some specialization among scientists and practitioners.

The wealth and profound knowledge in ancient spiritual traditions over centuries has not been adequately acknowledged, explored and integrated by formal western science.

### Presentation Notes

**Supplementary Readings:** "The Canon and the Wisdom of the East" by Arthur Danto in Harper's Magazine, 1990; and "Introduction" from Teachings from the American Earth by Dennis and Barbara Tedlock, 1975.

**Supplementary Reading:** "An American Indian Model of the Universe" from Teachings from the American Earth by Dennis and Barbara Tedlock, 1975.

**Supplementary Reading:** "Science in Native America" by Richard I. Ford in Winds of Change, 1986.

# TEACHING THE SCIENCE OF ALCOHOL: BRIDGING AMERICAN INDIAN CULTURE AND THE NEW SCIENCE PARADIGM

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Indian metaphysics was the realization that the world, and all its possible experiences contributed a social reality, a fabric of life in which everything had the possibility of intimate knowing relationships because, ultimately, everything was related. This world was a unified world, a far cry from the disjointed and sterile world painted by western science (Deloria, 1986).

A well-ordered humanism does not begin with itself, but puts things back in their place. It puts the world before life, life before man, and the respect of others before love of self. This is the lesson that the people we call "savages" teach us; a lesson of modesty, decency and discretion in the face of a world that preceded our species and that will survive it (Levi-Strauss, 1972).

**Discussion:** Consider the implications of the following words spoken by Werner Heisenberg:

It is probably true quite generally that in the history of human thinking the most fruitful developments frequently take place at those points where two different lines of thought meet. These lines may have their roots in quite different parts of human culture, in different times or different cultural environments or different religious traditions: hence

# TEACHING THE SCIENCE OF ALCOHOL: BRIDGING AMERICAN INDIAN CULTURE AND THE NEW SCIENCE PARADIGM

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Recurring through all this is the attitude of humility and respect toward reality, toward nature and society. I cannot find an adequate English term to apply to a habit of thought which is so alien to our culture. We are aggressive toward reality. We say, This is bread; we do not say like the Wintu, I call this bread, or I feel or taste or see it to be bread. The Wintu never says starkly this is; if he speaks of reality which is not within his own restricting experience, he does not express it, he only implies it. If he speaks of his experience, he does not express it as categorically true. Our attitude toward nature is colored by a desire to control and exploit. The Wintu relationship with nature is one of intimacy and mutual courtesy. He kills a deer only when he needs it for his livelihood, and utilizes every part of it, hoofs and marrow and hide and sinew and flesh. Waste is abhorrent to him, not because he believes in the intrinsic virtue of thrift, but because the deer had died for him. A man too old to fend for himself prays:

...I cannot go up to the mountains  
in the west to you, deer;  
I cannot kill you and bring you home...  
You, water, I can never dip you up

if they actually meet, that is, if they are at least so much related to each other that a real interaction can take place, then one may hope that new and interesting developments may follow.

## TEACHING THE SCIENCE OF ALCOHOL: BRIDGING AMERICAN INDIAN CULTURE AND THE NEW SCIENCE PARADIGM

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and fetch you home again....  
You who are wood, you wood,  
I cannot carry you home on  
my shoulder (Lee, 1975).

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**Discussion:** How is the perspective of the Wintu consistent with the new paradigm? In what ways is it reflected in the Medicine Circle? How could the information in these last two paragraphs be applied in a classroom with American Indian students?

The notion that formal science is moving toward a more holistic understanding of the universe is an important tool for teachers of American Indian children. These children, to the degree that they are in touch with their own traditional American Indian culture, have lessons to teach us about the application of the new paradigm. Teachers have a powerful tool in this understanding: a tool that can be used to foster pride and self worth. These children and their families have a cultural perspective that can offer the world needed insights and views that are becoming more and more necessary.

In addition, people learn best and remember more when information is presented to them in a framework or context which makes cultural and social sense, which is relevant to them. The convergence of the new science understanding of the world and Medicine Circle offers educators an opportunity to effectively integrate culture and curriculum with a sense of respect and sensitivity.

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**Activity:** As a review of the concepts in this unit and an application of them in the classroom, ask participants to create a visualization or guided imagery. Suggest that they create an experience of a student from a home culture steeped in the American Indian world view who goes daily to a school that espouses current paradigm thinking. Explore the conflicts and opportunities in this situation.

**Activity:** Ask participants to generate key concepts from the unit. Ask small groups to write brief summaries of the concepts listed. Ask them to add other concepts as well. Each group can summarize one or two concepts for the larger group. Individuals or groups can be asked to write essays on one or more of the concepts. In keeping with the concept of holism, ask participants to show relationships or connections among key concepts.

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# Unit Handouts/Overheads

Handout 1	North American Fruit Juice Producers' Survey	Handout 9	Letter Written by an Indian Parent
Overhead 1	Teacher Attitudes	Handout 10	The Two Worlds I Live In
Overhead 2/ Handout 2	Positions on Alcohol Use	Overhead 8/ Handout 11	Some Effects of Acculturation
Handout 3	Alcohol Discussion Questions	Overhead 9	Cultural Differences in Interpretation
Overhead 3/ Handout 4	Medicine Circles	Overhead 10	Responding to Two Cultures
Handout 5	Identifying Children of Alcoholic Parents	Overhead 11/ Handout 12	Each Person is Like...
Handout 6	Suggestions for Teachers for Supporting Children from Alcoholic Families	Overhead 12/ Handout 13	Perspectives of Nature
Overhead 4	Every Person has a Unique Perception of the World	Handout 14	Learning Style Comparison
Overhead 5	The Stream	Overhead 13	Holism -- Dualism
Overhead 6	Two Women	Overhead 14/ Handout 15	Cultural Relativism and Ethnocentrism
Handout 7	Woman A	Handout 16	Cultural Relativism
Handout 8	Woman 1	Handout 17	Teaching Children Science: An Inquiry Approach
Overhead 7	Woman A1		

Overhead 15	A Synapse
Overhead 16	Pierre
Overhead 17	Fish Reflecting on Water
Overhead 18	Reductionist View
Overhead 19	Biological Machine Driven by Instinctual Impulses
Overhead 20	A Cell: The Basic Unit of Life
Overhead 21	Paradigms and Paradigm Shifts
Overhead 22/ Handout 18	Axioms About Current Paradigm and Emerging Paradigm
Overhead 23	Scientist Looking at His Glasses
Story 1/ Handout 19	Hopi Creation Story
Story 2/ Handout 20	Preparing for a Sing

## North American Fruit Juice Producers' Survey

Names of Persons Surveyed:

Place of Employment:

A. \_\_\_\_\_

\_\_\_\_\_

B. \_\_\_\_\_

\_\_\_\_\_

C. \_\_\_\_\_

\_\_\_\_\_

1. How much fruit juice do you drink each day?

A.

B.

C.

2. What time of day do you tend to drink fruit juice?

A.

B.

C.

3. How have your fruit juice drinking habits changed over the last ten years?

A.

B.

C.

4. Do you feel you should change your fruit juice drinking habits?

A.

B.

C.

5. How much money does your household spend on coffee per week?

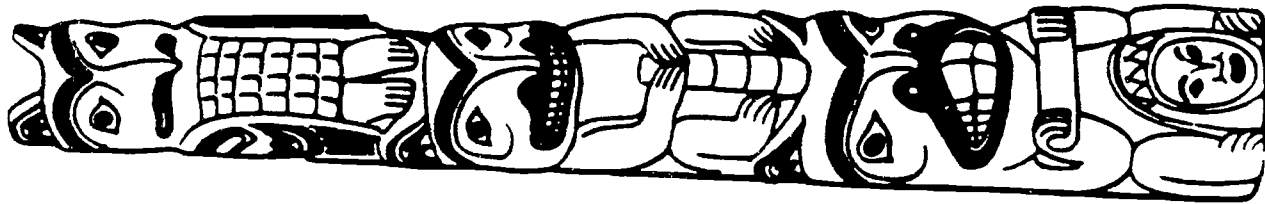
A.

B.

C.

Handout 1





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TEACHER ATTITUDES AND BEHAVIOR ABOUT ALCOHOL  
ARE PROBABLY MORE IMPORTANT IN EFFECTING  
RESPONSIBLE ATTITUDES AMONG STUDENTS THAN IS  
KNOWLEDGE ABOUT THE FACTS OF ALCOHOL.

Overhead 1



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**POSITIONS ON ALCOHOL USE**

- A. REMAIN PUBLICLY NEUTRAL**
- B. ACKNOWLEDGE ABIVALENCE**
- C. EXPRESS OPINIONS**
- D.**
- E.**

Overhead 2/Handout 2

## Alcohol Discussion Questions

How strong is peer pressure among adolescents to drink? Does pressure to drink exist for adults? Can the two be compared?

Should teachers present or have students research the pleasure many people derive from drinking alcohol?

How should people respond to a pregnant woman who drinks?

Is it ever okay for people to drink before they are adults? When?

How can a teacher handle questions regarding other school staff members who seem to overuse alcohol?

How can moralizing be avoided? Should it be avoided?

Might drinking attitudes and practices of teachers affect their ability to teach about alcohol?

Why are denial and alcohol so intertwined?

What stereotypes do students have regarding alcohol use among the following: men versus women, young versus old, Indian versus non-Indian, successful versus unsuccessful, urban versus rural?

Do youths take more risks when they drink than do adults? Is the reverse ever true?

Are there ever good reasons for getting drunk? Are there times when drunkenness is accepted? expected?

Should American Indian students study statistics that compare alcohol use among Indian groups with the euro-ethnic culture?

How can misinformation or poor advice given to a student from a parent or community member be corrected?

What does someone have to be like to be an "abuser of alcohol"?

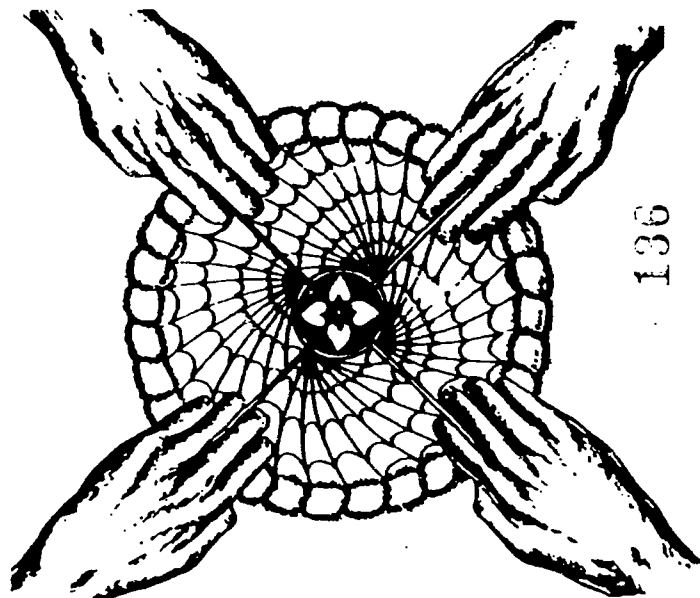
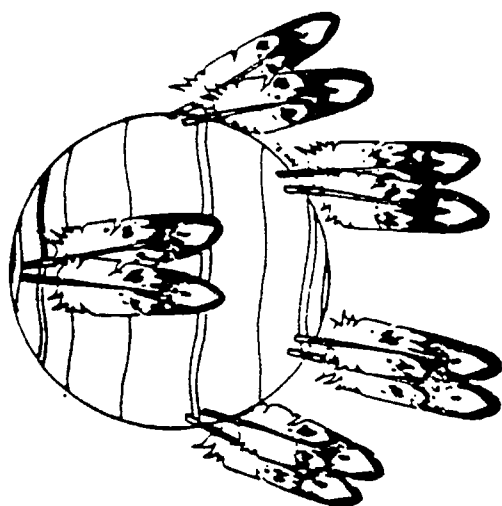
Should adults with drinking problems and youths with drinking problems be viewed differently?

How can teachers present to students reasons why some people drink and others abstain?

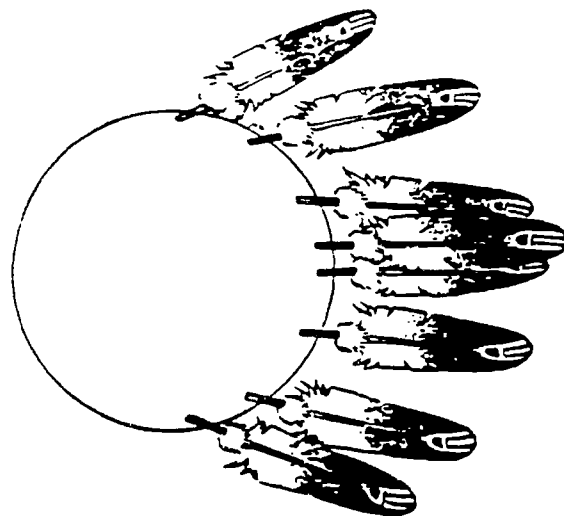
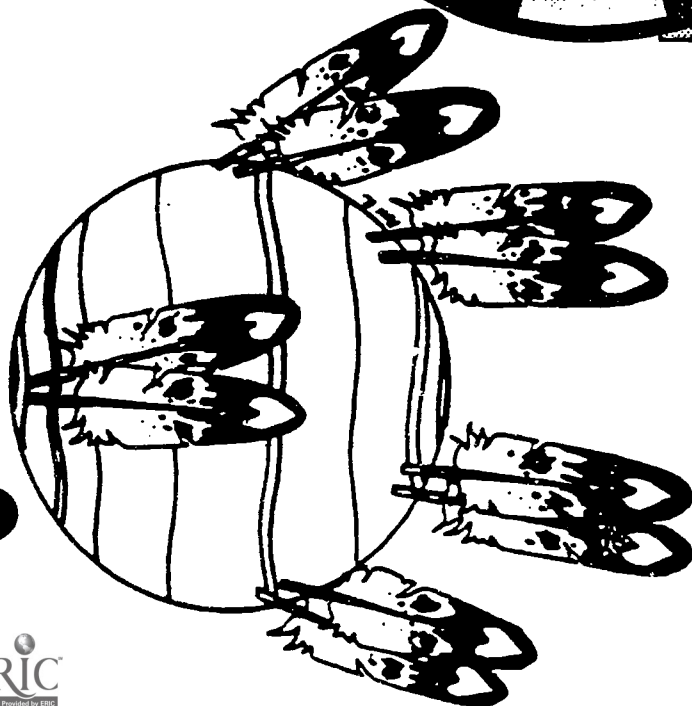
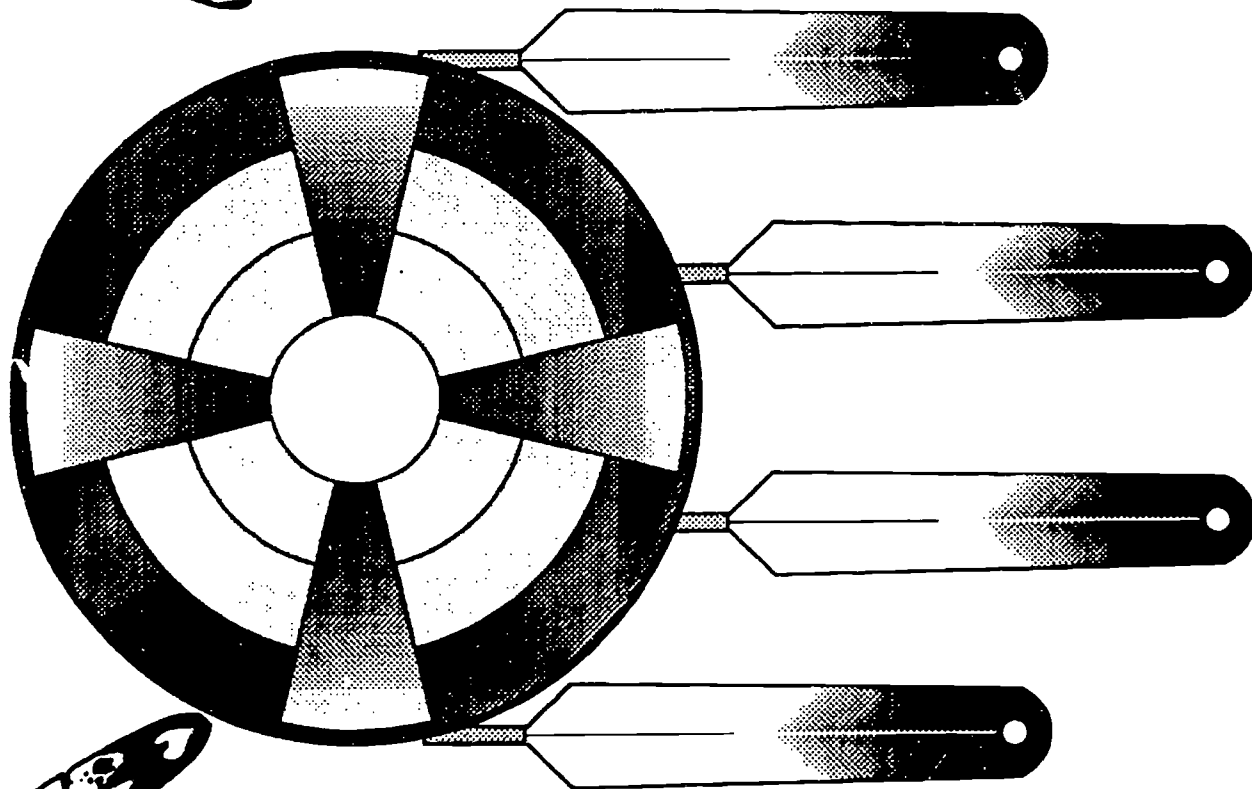
Adapted from "Teacher Training in Alcohol Education: Goals, Approaches, and Content" in Journal of Drug Education 12 (3), by Peter Finn and Patricia O'Gorman, Baywood Publishing Company, Amityville, NY, 1982.

Adapted from Teaching About Alcohol: Concepts, Methods, and Classroom Activities, by Peter Finn and Patricia O'Gorman, Allyn and Bacon, Inc., copyright 1981.

# MEDICINE CIRCLES



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## Identifying Children of Alcoholic Parents

This list includes characteristics that are often associated with children of alcoholics and their behavior in the classroom. It should be used only as an indicative measure to monitor patterns, not as a means to relate isolated incidents or traits to a cause.

### General Characteristics:

Unkempt/unclean  
Consistently late to school  
Loner  
Frequently absent  
Immature and regressive behavior  
Lethargic  
Non-confrontational/adamantly avoids conflict  
Emotionally unpredictable and prone to outbursts  
Short attention span/lack of focus  
Elusiveness and fear regarding issues or events that involve parents

### Characteristics During Alcohol Education:

Pays uncharacteristically close attention to alcohol discussions  
Has only negative things to say about alcohol and alcoholics  
Refers to drinking problem of "friend" or "friend's relative"  
Finds excuses to linger in classroom after alcohol discussion or lesson  
Is very familiar with alcohol varieties and terms  
Associates alcohol with drunkenness

## **Suggestions for Teachers for Supporting Children from Alcoholic Families**

### **For the Caretaker or Family Hero:**

- \* Assist this child in coming to understand that it is okay to make a mistake
- \* Show the child that his self-worth is separate from his accomplishments
- \* Respond to him at times when he is not being actively responsible
- \* Avoid letting the child monopolize conversations
- \* Encourage him to relax, have fun, feel comfortable asking for help, and be spontaneous

### **For the Scapegoat:**

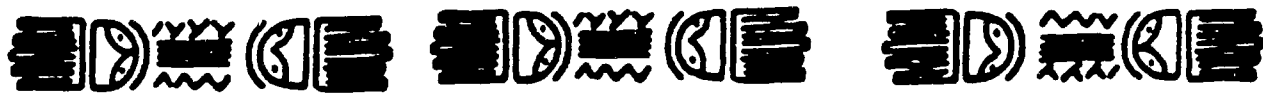
- \* Let this child know when behavior is not appropriate
- \* Reward her for taking responsibility
- \* Avoid reacting to her with anger or defensiveness by developing an empathetic understanding of the fears and needs her behavior exhibits
- \* Do not treat the child as special thereby giving her more power
- \* Encourage her to express anger constructively
- \* Help her find ways to express her hurt feelings

### **For the Lost Child:**

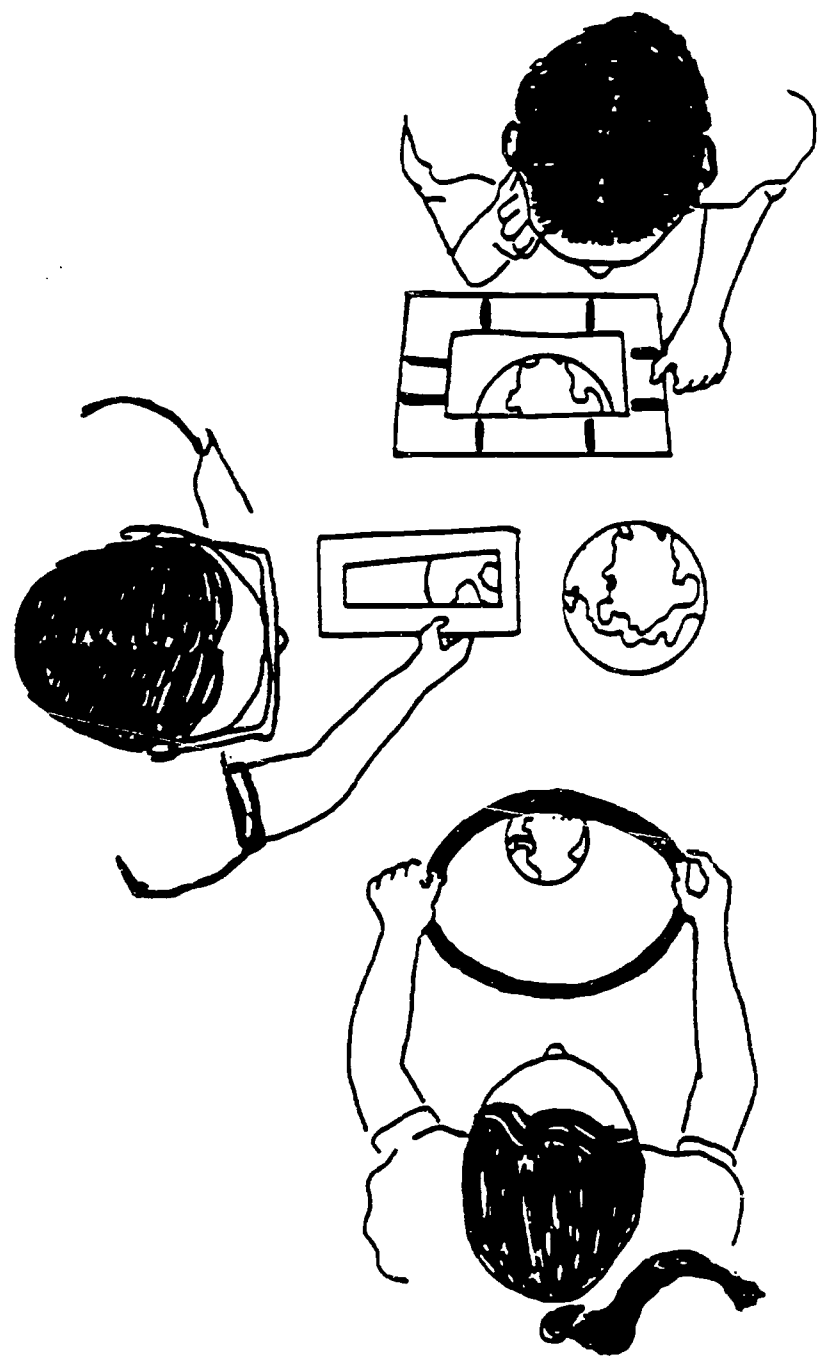
- \* Look for the lost child in your classroom and give him individual attention
- \* Point out his strengths and abilities to him
- \* Encourage him to share ideas and interests
- \* Encourage working in small groups to help build trust
- \* Avoid letting him remain silent
- \* Encourage him to identify his wants and needs
- \* Help him feel that he is important and that he deserves attention

### **For the Mascot:**

- \* Show disapproval of inappropriate "class clown" behavior
- \* Give her a job in the class with some importance or responsibility
- \* Encourage an appropriate sense of humor
- \* Remember this behavior often hides depression and fear
- \* Discuss a variety of ways to deal with conflict with her
- \* Encourage her to accept help from others
- \* Assist her in focusing her attention on herself and her needs and concerns



# EVERY PERSON HAS A UNIQUE PERCEPTION OF THE WORLD



from Cognitive Learning Styles and Strategies, by Leonard Baca, Catherine Collier, Cecelia Jacobs, and Rocky Hill, School of Education, University of Colorado, Boulder, CO, 1990





Overhead 6





Woman 1



Handout 8



## Letter Written by an Indian Parent

Dear Teacher,

Before you take charge of the classroom in which my child is enrolled ask yourself why you are going to teach Indian children. What are the stereotypes and untested assumptions that you bring with you into the classroom?

What values, class prejudice and moral principles do you take for granted as universal? Please remember that "different from" is not the same as "worse than" or "better than", and the yardstick you use to measure your own life satisfactorily may not be appropriate for their lives. The term "culturally deprived" was invented by well meaning middle class whites to describe something they could not understand.

Many teachers, unfortunately, seem to see their role as a rescuer. My child does not need to be rescued; he does not consider being Indian as misfortunate. He has a culture older than yours; he has meaningful values and a rich and varied experiential background. However strange or unbelievable it may seem to you, you have no right to do or say anything that may imply to him that it is less than satisfactory.

Like most Indian children his age, he is competent. He can dress himself, prepare a meal for himself and clean up afterwards, and care for a younger child. He knows his reserve like the back of his hand, all of which is his home. He is not accustomed to asking permission to do ordinary things that are part of normal living. He is seldom forbidden to do anything, more usually the consequences of an action are explained to him, and he is allowed to decide for himself whether or not to act.

He is not self-conscious in the way white children are. Nobody has ever told him his efforts towards independence are cute. He is a young human being energetically doing his job, which is to get on with the process of learning to function as an adult human being. He will respect you as a person, but he will expect you to do likewise with him.

He doesn't speak standard English, but he is in no way linguistically handicapped. If you will take the time and courtesy to listen and observe carefully, you will see that he and the other Indian children communicate very well among themselves and other Indians. They speak functional English very effectively increased by their fluency of facial expressions, gestures, body movement and the use of personal space.

Will you help my child learn to read, or will you teach him that he has a reading problem? Will you help him develop problem-solving skills or will you teach him that school is where you try to guess what answer the teacher wants? Will he learn that his own sense of value and dignity is valid, or will he learn that he must forever be apologetic and "trying harder" because he isn't white? Can you help him acquire the intellectual skills he needs, without at the same time, imposing your values on top of those he already has?

Respect my child. He is a person. He has a right to be himself!

Yours For More Native Awareness,

reprinted with permission from:  
North American Indian Traveling College  
R.R.3, Cornwall Island

## The Two Worlds I Live In

As a Native American pursuing a college education, I live in two worlds, traditional and modern. On the Arizona Navajo reservation, amidst the dry vast area, protected by juniper trees and an arid vegetation, my parents live in a shack made out of twigs, with a round earth hogan, by a corral of sheep. These are my parents' property and value. In a city called Boulder in Colorado, on the C.U. campus, I study and reside as a student. My class attendance and performance are most important to me. Transition from one world into another is easy for me, since I am familiar with both worlds. However, there are a lot of differences between the two worlds.

There is a big difference in waking up in the two worlds. Before the sun peaks over the "missing tooth hill," I wake up to the crow of the rooster. The atmosphere is quiet. "The good spirits only give blessings at this time," is my mother's motto. If there is a sound to be heard, it is of the birds singing among the juniper trees, a sheep bleating, and a soft movement of a cowbell worn by a sheep; this sheep is known for its tardiness when out in the pasture. The air is thin and carries a scent of juniper. In the modern world, I wake up to the alarm, at any hour according to my class schedule, instead of the rooster. There is usually more noise here, noise from other alarm clocks, doors slamming, groans, toilets swooshing, showers running, and hair dryers going in first gear. From outside, there are cars starting, the clanking of machinery, and an ambulance screaming to the north. I wake to a quiet atmosphere and clean air in the traditional world, but not in the modern world.

There are chores I do in the traditional world throughout the day, especially in the morning; whereas, there are really no chores in the modern world. The traditional morning chores usually are chopping wood for fire, hauling wood to a spot near the twig shack, and making a trip to the water barrels. I build the fire and set a tea kettle of water over the open fire for coffee. In college, I would still be sleeping instead of working as I do back home.

Grooming in the traditional world and modern world differs for me also. At home, "the behind the bush activity" is done in place of going to the restroom; any place is fine just so the bush or hill is high enough to provide privacy. On campus, I just find a sign with the word "women" on it, before I can go to the bathroom. Wearing clean clothes for the day does not matter in the traditional life. I wear the same outfit of clothes worn as pajamas last night for the coming day. In the modern life, I brush my teeth and shower before dressing in my clean clothes. These clean clothes are worn for one day, then discarded in the laundry basket. Showers are not necessary at home either; a splash of cold water on the face is enough to get clean.

The food prepared in each world also differs. Meals on campus are planned carefully by people who are experts in nutrition. The food is balanced, fancy, and it varies daily. There are hired chefs who prepare these meals. At home, my meals are cooked by my mom. They are neither balanced nor fancy, but what really matters is that they satisfy my hunger. She (my mom) prepares these meals according to what is affordable and available. The three basic meals generally consist of hash browns with meat scraps, fried bread, coffee, and occasionally a can of fruit. Meals in the dorm are of steaks, meatloaf, salads, milk, fancy pastries, and unheard of desserts.

There are major tasks in both worlds--classes and sheepherding, but each requires a different activity. Sheepherding requires a lot of walking on my part as the shepherd. The walking distance depends on the grazing need for the sheep; if there is not much grass in one place, then I usually take them two or three miles farther. Attending classes is the major activity during the day on campus. I walk to my classes, but less walking is required here and I become immobile in class. I attend lectures and participate in discussions; whereas, when I'm herding sheep, I am not required to say a single word the whole day. When out in the pasture with the sheep it is so quiet I scare myself often, if a pebble stirs beneath my feet. I find it amusing to watch lizards tanning themselves in the desert sun, and sheep munching on grass. When I am on campus my mind is mentally active, and when herding sheep I am physically active.



Upon returning to my mother's place with the sheep, my mother is always interested in my day with the sheep. "Did the sheep behave? Was there plenty of grass at the place where the flock grazed?" She also asks how I am physically, meaning whether I was fit for the chore or my legs were still in good shape for walking. She is a symbol of security and love to me. Meanwhile, the atmosphere at the dorm after class is usually different from the above. "How was your day, man?" is usually asked by a close friend. I could tell them about my day like I told my mom, but they go through almost the same routine as I do on a week day. The question also lacks concern and interest. So I respond with a not so lively flat, "fine." They complain about their paper, labs, and tests, not caring about how I am doing. My mom and I have a close relationship, and my friends and I have a different one.

There is a different way of ending a day in both worlds. Since there are no lights in the traditional world, with an exception of a kerosene lamp, the sun determines sleep time here. As soon as the sun starts to set, bedding is laid out on the ground of the hogan. The bed is made out of sheepskins and checkered quilts, sewn together out of rags given to my mother by a church group. (At the dorm I sleep on a mattress with a clean lining.) The kerosene lamp is blown out. All is quiet in the dark hogan, but there are sighs and stirs once in a while. The bleating of a lamb is heard from the corral, but he finds his mom and settles down; meanwhile, there are lights still on in the building on campus. Life is still stirring. Students are studying, typing papers, and conversing. Stereos and radios are still a-rockin' and talking. The telephones are still ringing at eleven-thirty p.m. Exactly what hour I go to sleep is unpredictable in this world. Come three a.m., there is usually someone, even myself, still clicking away at a typewriter. The sun determines when it is time for sleep in the traditional world, but my studies and clock determine my sleep in the modern world.

Although I feel uncomfortable in both worlds--modern and traditional--if there was a decision between these two, I would sacrifice the modern world. Being an Indian, I prefer to follow the red road with my stinky moccasins; this leads to my people and our nation.

# **SOME EFFECTS OF ACCULTURATION**

**HEIGHTENED ANXIETY**

**CONFUSION IN LOCUS OF CONTROL**  
(perception of control as internal or external)

**WITHDRAWAL**

**UNRESPONSIVENESS/SILENCE**

**CODE SWITCHING**  
(substituting sounds, words, or syntax elements)

**DISTRACTIBILITY**

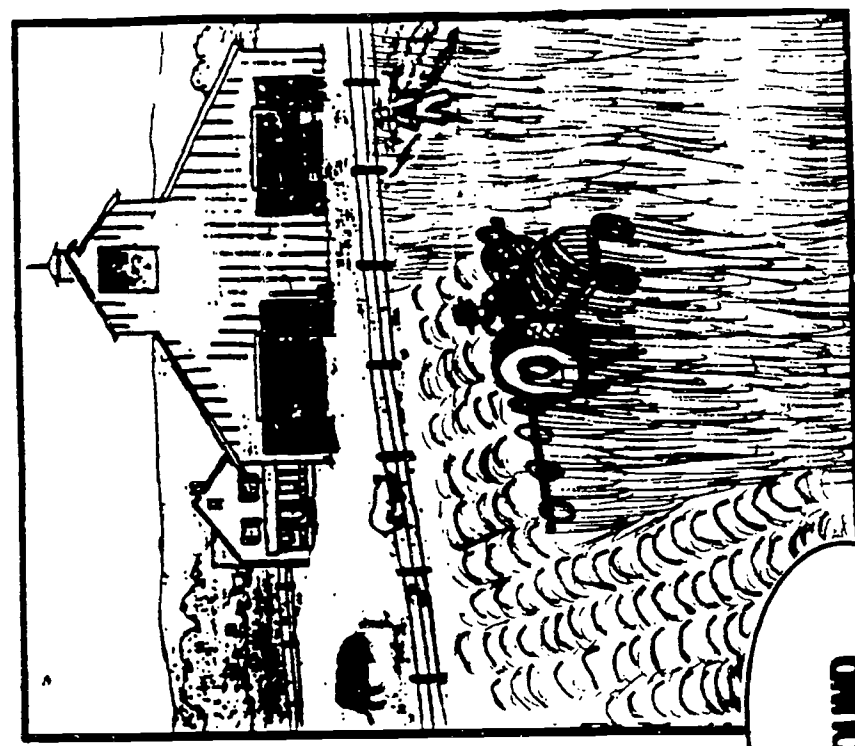
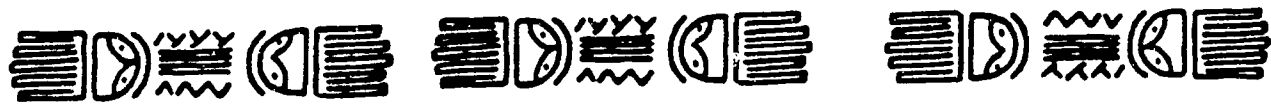
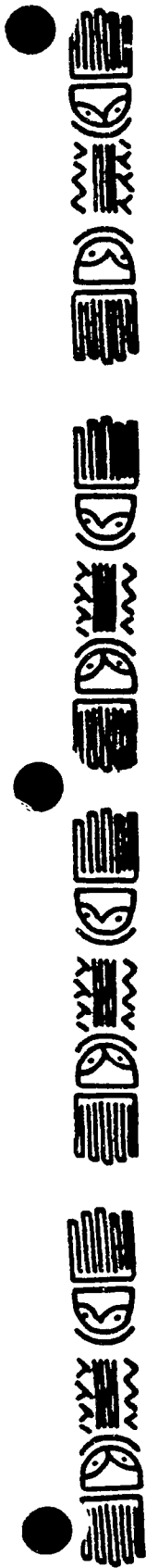
**RESISTANCE TO CHANGE**

**DISORIENTATION**

**POOR SELF IMAGE**

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overhead 8/Handout 11



FURROW



WOUND



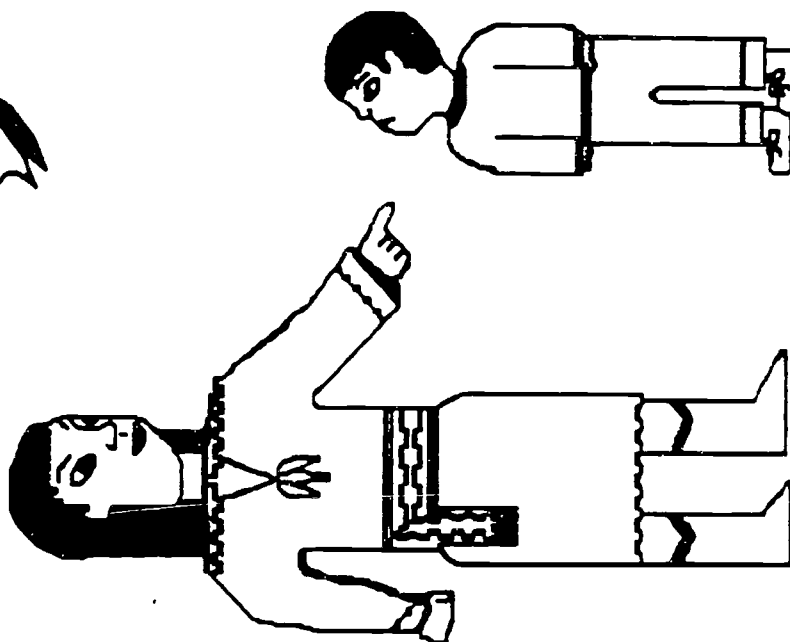
Overhead 9

# Cultural Differences in Interpretation

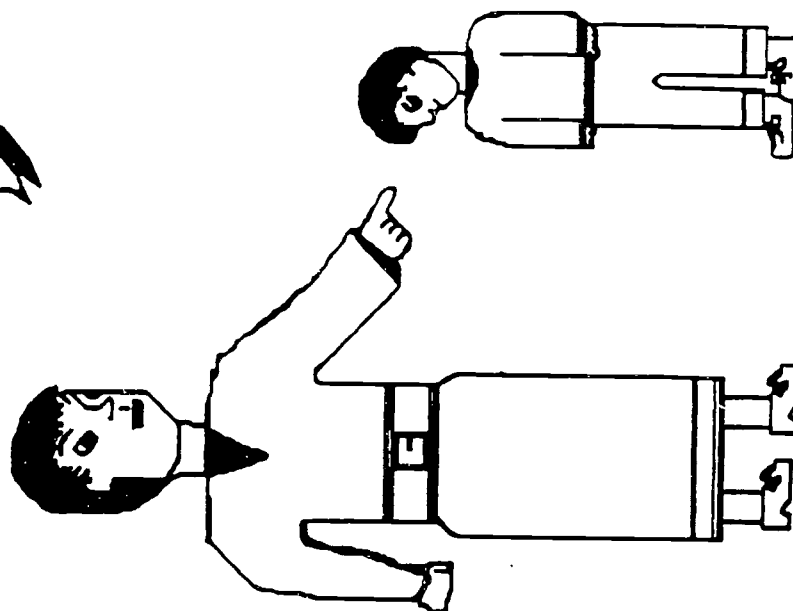


## RESPONDING TO TWO CULTURES

Don't look at me when  
I'm talking to you!



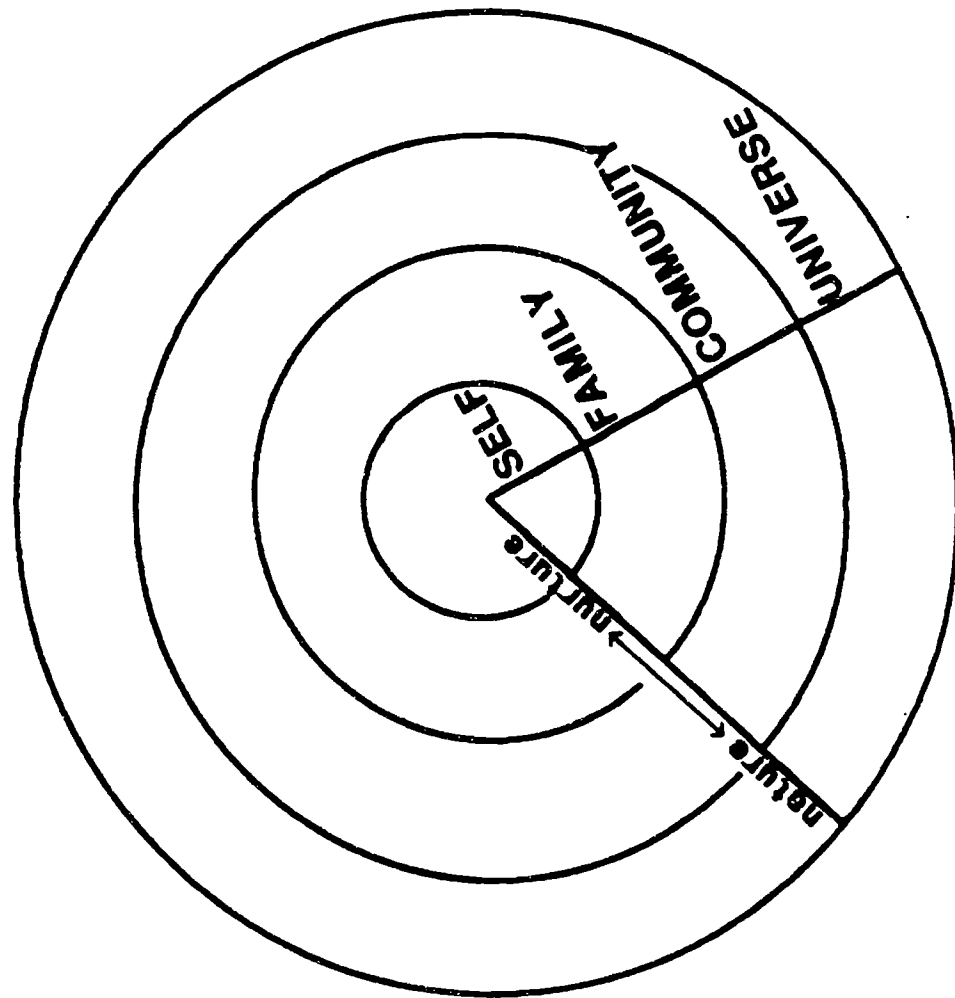
Look at me when  
I'm talking to you!



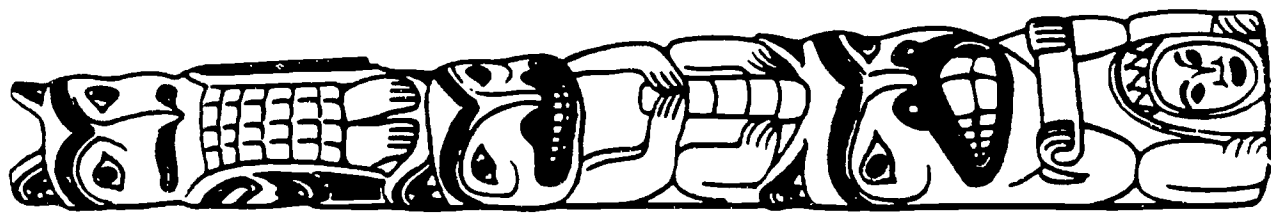
**Each person is like no other. (experiences)**

**Each person is like some others. (culture/values)**

**Each person is like all others. (physiology)**



Overhead 11/Handout 12





## LEARNING STYLE COMPARISON

The following are two lists of learning styles that have been compiled to illustrate some of the more common differences between the euro-ethnic culture and the American Indian culture. Keeping in mind the danger of stereotyping, the two lists of attitudes towards learning should be used as a tool for greater sensitivity to different approaches.

TYPICAL EURO-ETHNIC CULTURE  
LEARNING STYLES

Well defined, organized.

Listens to explanation then learns by trial and error.

Wants teacher as consultant.

Prefers direct instruction.

Likes to try new things.

Sees time as limited.

Starts with parts, specific facts, facts, and builds toward the whole.

Insists on reason, logic, facts, causes.

Prefers public recognition and reward.

Competes for recognition.

Task oriented.

Impersonal, formal, structured.

Likes discovery approach.

Relies on language for thinking and remembering.

Likes talking and writing.

TYPICAL AMERICAN INDIAN  
LEARNING STYLES

Informal atmosphere.

Observes carefully then tries when he feels secure.

Wants teacher as model.

Prefers to be shown.

Likes learning through stories, pictures, activities.

Sees time as infinite.

Starts with overall view, holistic, general principles.

Accepts intuition, coincidence, coincidence, feelings, emotion, hunches.

Prefers private recognition and reward.

Cooperates and assists.

Socially oriented.

Personal, informal, spontaneous.

Likes guided approach.

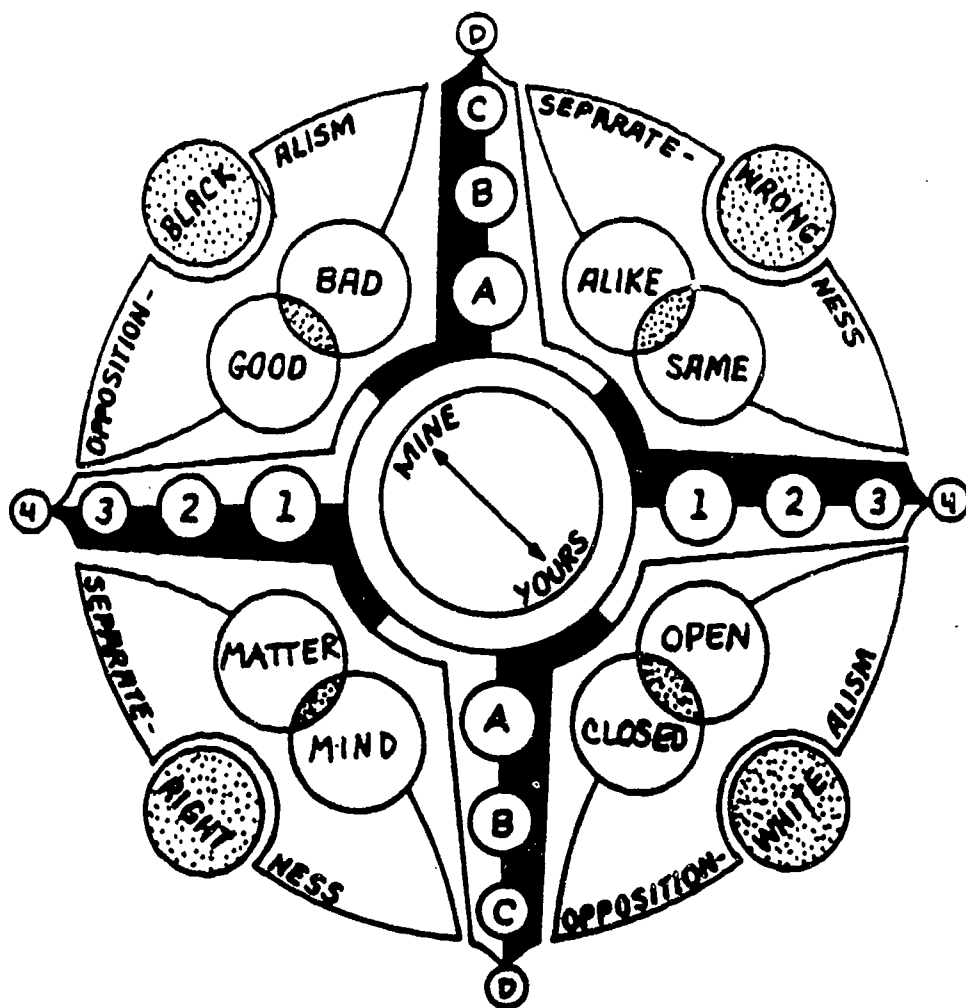
Relies on images for thinking and remembering.

Likes drawing, manipulation.

Adapted from Gilliland, H. and Reyhner, J., Teaching the Native American, Kendall/Hunt Publishing, Co., 1988, p. 54. and Nazzaro, J.N., Culturally Diverse Exceptional Children in School., 1981.



## DUALISM



## HOLISM



Overhead 13

# CULTURAL ETHNOCENTRISM RELATIVISM

Sensitivity to and acceptance of cultural difference can be combined with a sense of pride in one's own heritage. These two concepts strengthen each other. When there is one without the other, there is lack of balance.

## Cultural Relativism

by Elmer S. Miller

Cultural Relativism: the attempt to understand and evaluate each cultural system in terms of its own internally consistent logic. Before the need for relativism was recognized, visitors to cannibalistic tribes, for instance, were appalled at their "immoral" practices. They were judging cannibals by their own society's moral code, by which it is unthinkable to eat human flesh. But later anthropologists made an effort to be less culturally subjective in their observations. They tried, for instance, to accept the fact that some cultures consider cannibalism acceptable behavior. Instead of condemning it, they tried to determine what functions cannibalism serves for the groups that practice it. Ethnocentrism -- the tendency to judge other cultures by the standards of one's own culture -- became the devil to exorcise in every introductory anthropology course.

By the middle of this century, however, it became apparent that anthropologists could not completely free themselves from ethnocentrism. No matter how much they tried to immerse themselves in other cultures in order to understand them better, they were inevitably influenced to some extent by their own society's ways of looking at things. A certain amount of ethnocentrism seemed to be essential to the functioning of any social system, including their own. And in trying to explain their experiences to those back home, they found that they were obliged to translate them into terms which had significance in their own culture. Having to do so destroys the efforts to treat cultural systems in their own terms. Thus, anthropologists continually search for the most appropriate method of translating what they know about a culture into concepts that are meaningful in their own. Only by doing so are they able to offer insights into the operation of our own cultural system.

Another difficulty, which is potentially very serious, is that by attempting to explain objectively the function of practices which seem inhumane to us, anthropologists may seem to be approving them. Infanticide, for instance, can be explained in terms of its biological and social functions. To condemn the practice would require the kind of value judgment that anthropologists have long avoided. However, some anthropologists feel that they must make it clear where they stand on such matters. The question of how to do so without sacrificing relativism is a critical dilemma which anthropology has not yet resolved.

Reprinted from **Introduction to Cultural Anthropology**, by Elmer S. Miller, Prentice-Hall, Inc. copyright 1979.

Handout 16

## Teaching Children Science:

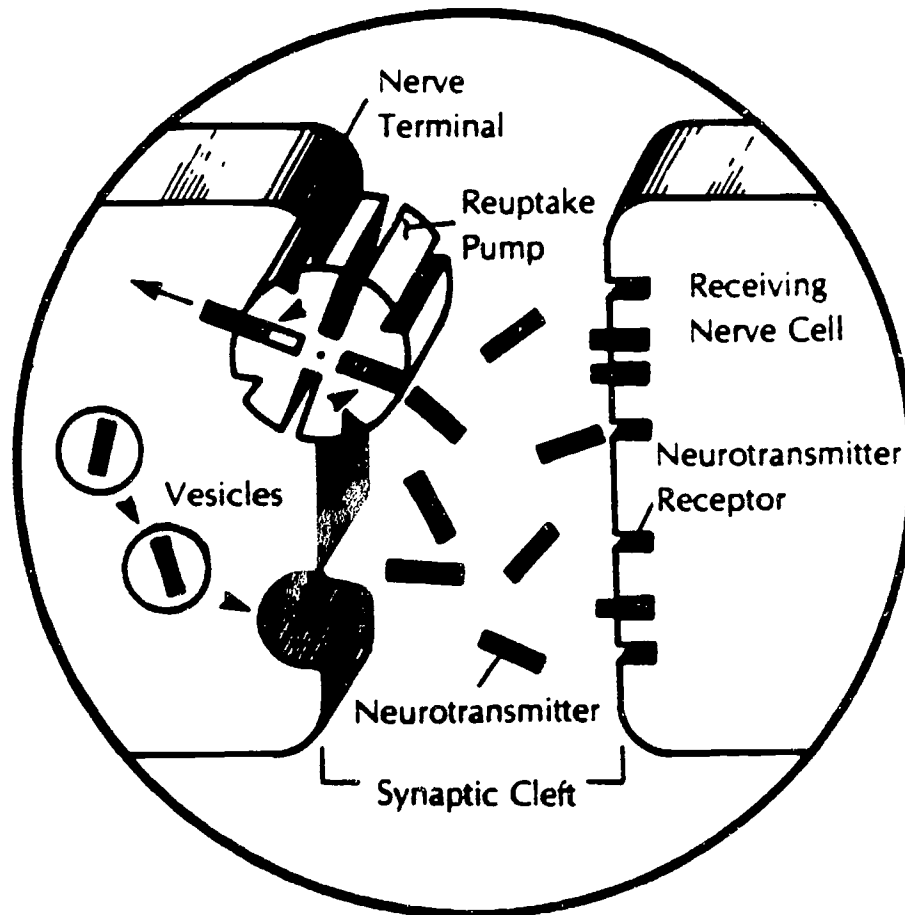
### An Inquiry Approach

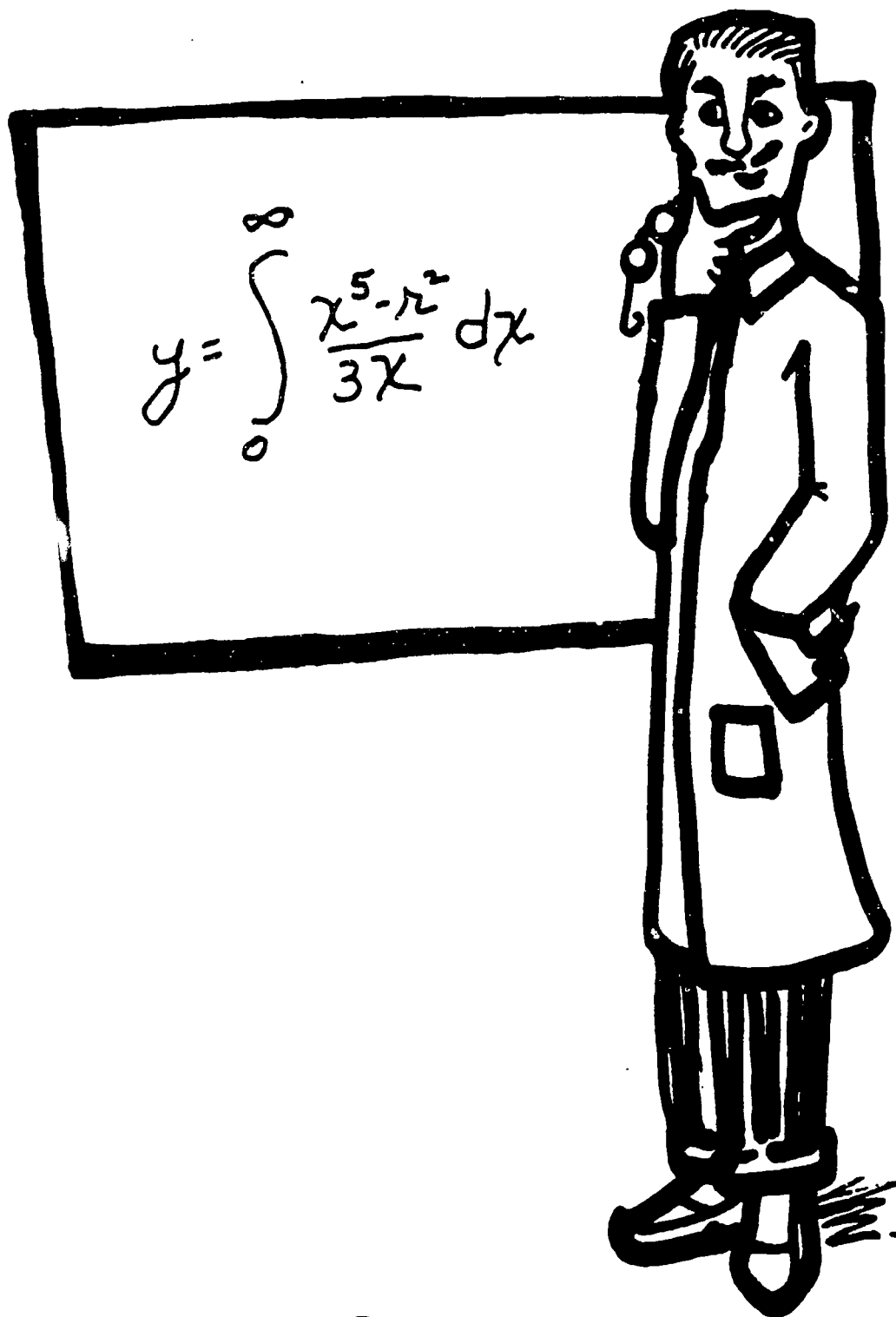
Man's mastery of nature, imperfect though it is, did not arise out of the magical incantations of primitive medicine men, but out of man's endeavor to understand the order of nature. Power over nature has come from this understanding and, therefore, ordered knowledge is one goal of the scientist. In its way magic was an attempt to understand and manipulate the order of nature, but because magic was subjective and animistic, it was irrelevant to the world and failed to give man the control he sought.

From Teaching Children Science: An Inquiry Approach by Louis I. Kuslan and A. Harris Stone.

Handout 17

## A SYNAPSE



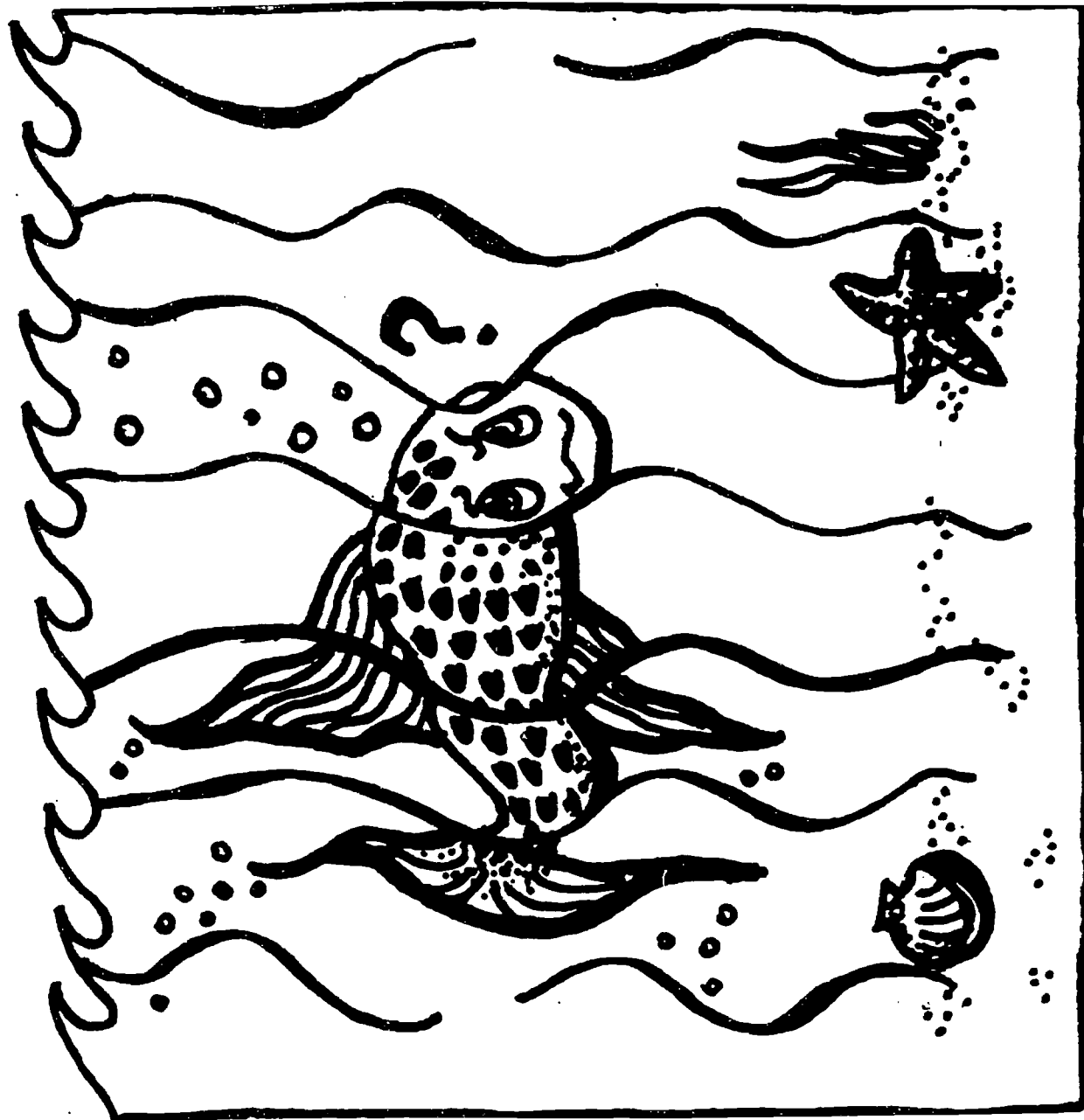


PIERRE

Overhead 16

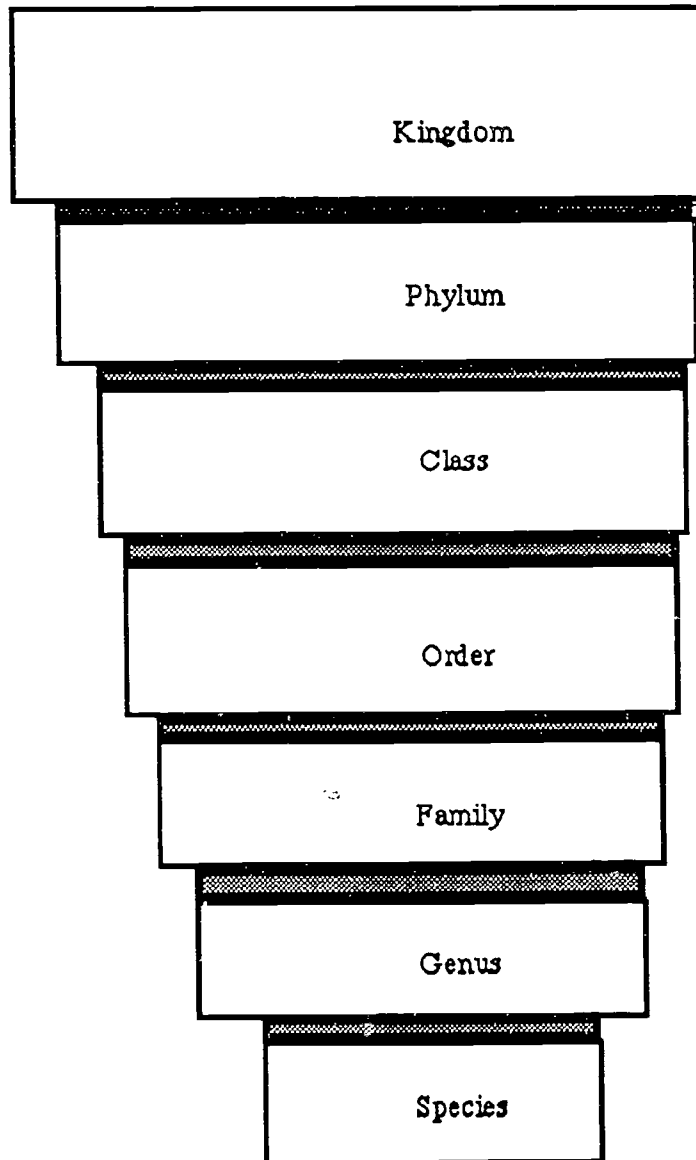
FISH REFLECTING ON WATER

overhead 17





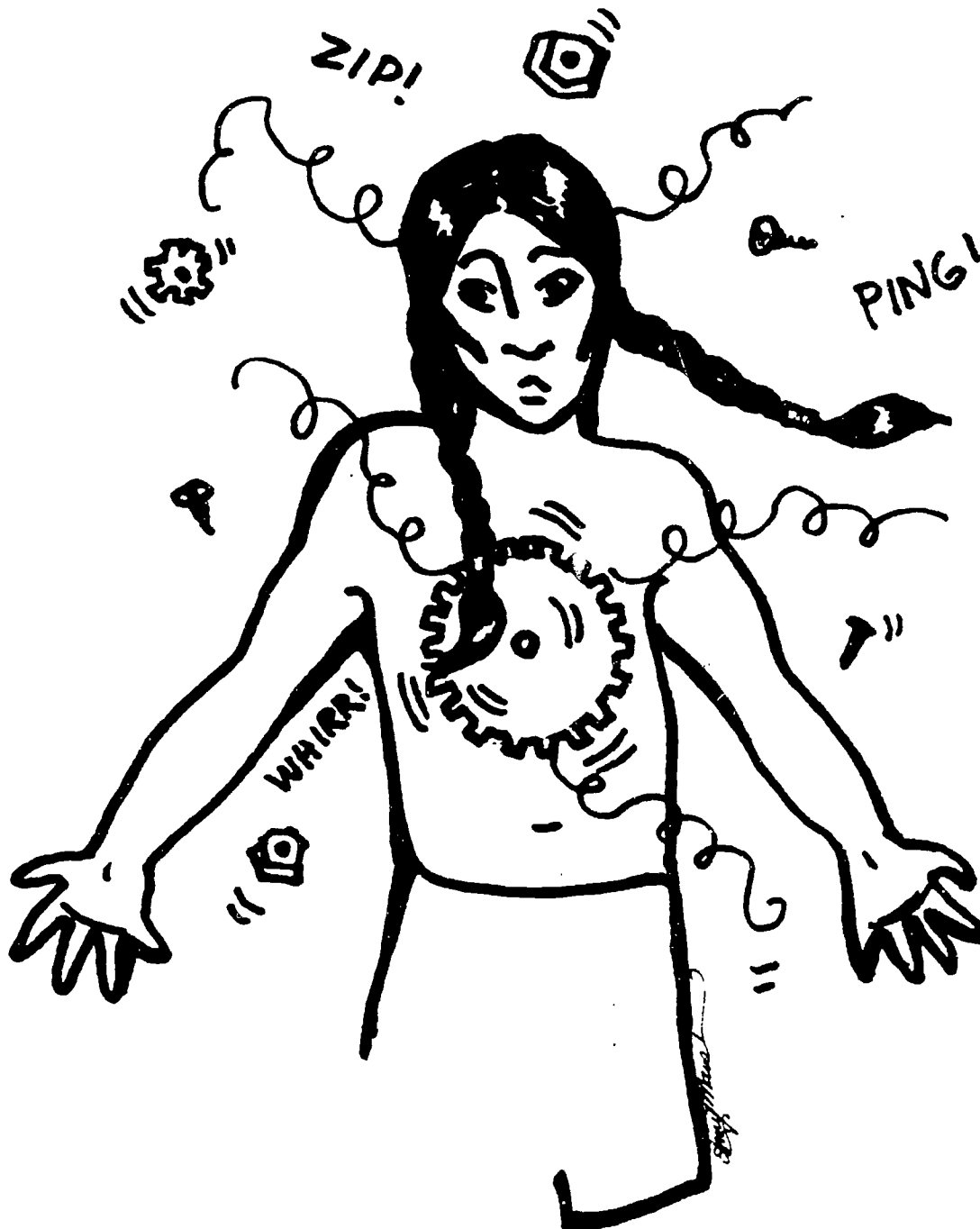
## Reductionist View



In the reductionist view, reality can be understood by the rational reduction from the complex to the simple, from the whole to the parts, from the process to the structure, from the abstract to the elemental.

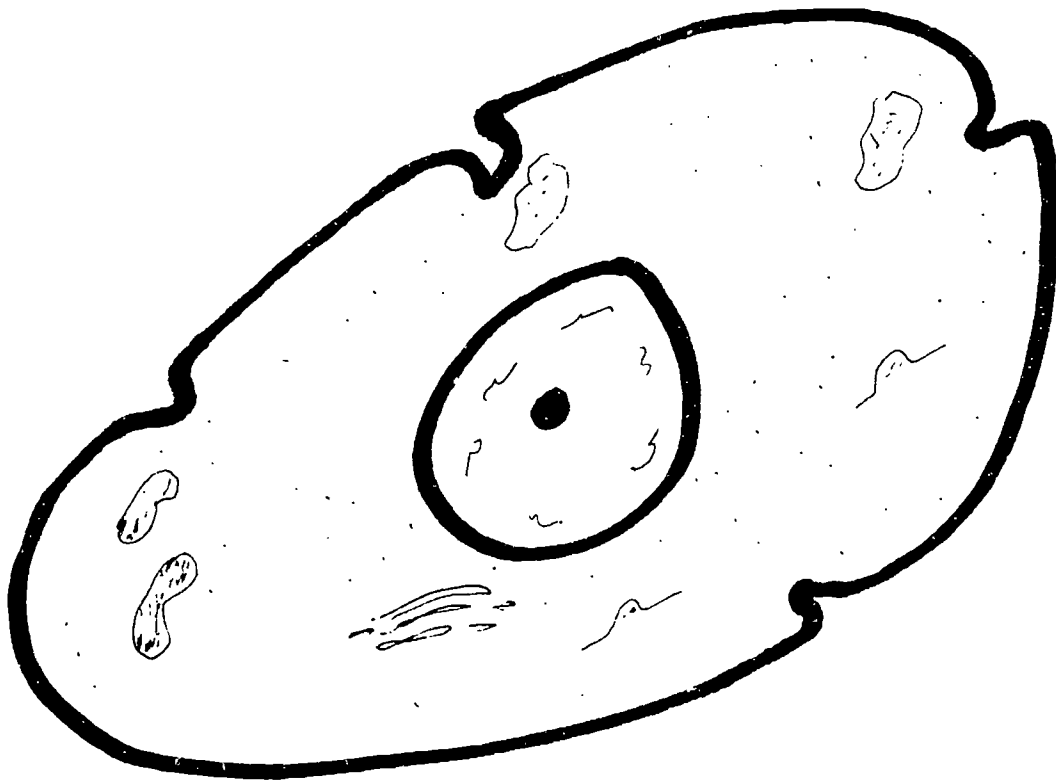
Overhead 18

BIOLOGICAL MACHINE DRIVEN BY INSTINCTUAL IMPULSES



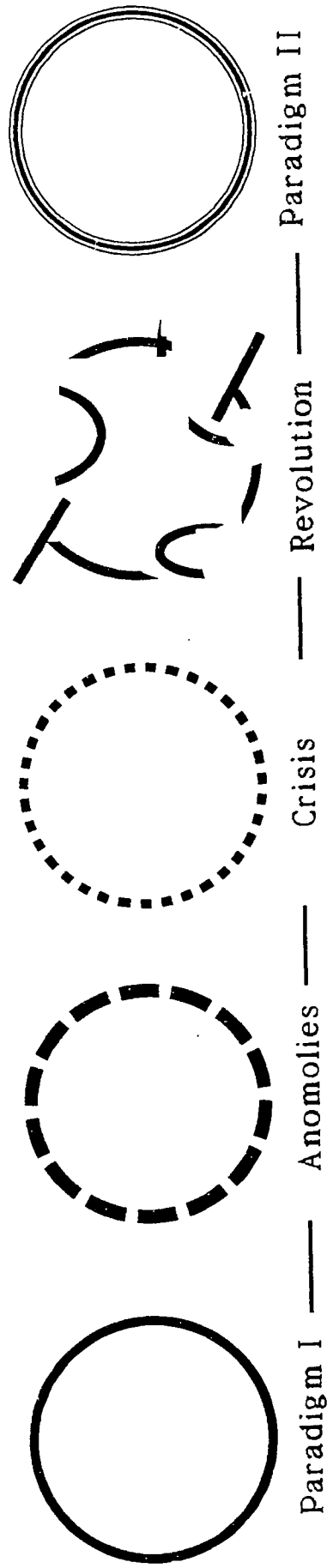
Overhead 19

## A CELL: THE BASIC UNIT OF LIFE



It is generally held that anything less than a cell is not alive; therefore, most of nature is dead.

Overhead 20



## Paradigms and Paradigm Shifts

Overhead 21

## AXIOMS ABOUT CURRENT PARADIGM AND EMERGING PARADIGM

Axioms About	Current Paradigm	Emerging Paradigm
The nature of reality	Reality is single, tangible, & fragmentable	Realities are multiple, constructed and wholistic
The relationship of knower to known	Knower and known are independent, a dualism	Knower and known are interactive, inseparable
The possibility of generalization	Time- and context-free generalizations (nomothetic statements) are possible	Only time- and context-bound working hypotheses (idiographic statements) are possible
The possibility of causal linkages	There are real causes, temporally precedent to or simultaneous with their effects	Reality is mutually shaped by dynamic forces; antecedent and consequences are not distinguishable
The role of values	Inquiry is value-free	Inquiry is value-bound

(Adapted from Lincoln & Guba, 1985, pg. 37)

SCIENTIST LOOKING AT HIS GLASSES

Overhead 23



## Hopi Creation Story The Four Worlds

It is said that no part of the vast arid plateau embracing parts of New Mexico, Arizona, Colorado, and Utah is more inhospitable than the Hopi Reservation of just over 4,000 square miles, itself completely surrounded by 25,000 square miles of the Navajo Reservation. From their homes, tenders of gardens, mostly corn and squash, may have to walk as many as ten miles to their site. For centuries, women have balanced jars of water on their heads as they climb the steep cliff sides.

This is the Hopi homeland, where they have been since the beginning, having migrated there from four previous worlds. Here is the story of creation according to the Hopi, the beginning of the Hopi, and their migration to the fourth world in which they, and we, now live.

At first, there was only Taiowa, the Creator. Then, from Tokpela, Endless Space, Taiowa created So'tuknang, the Nephew, and charged him with making order of the nine universes. This he did, arranging one for Taiowa and one for himself, and seven for the life to come. So'tuknang then divided the waters equally on the universes so that half was water and he also placed the forces of air in ordered movement around each universe.

After this was done, Taiowa was pleased and asked for the creation of life to complete the last four parts, Tu'waquachi of the universal plan. Therefore, So'tuknang went to the First World whose direction is West and whose color is yellow and created her who would remain on that world as his helper, Ko'kyangwu'ti, Spider Woman.

Spider Woman, who is the weaver and guardian of all life, including that of humans, created of tu'chvala (saliva), the twins Po:qa'ng'hoya and Palo:ngaw'hoya whose duties were to solidify the planet, to assure the rotation of the earth on its axis, and to set its vibrations to echo that of the creator. Everything was tuned to the Creator's sounds.

Spider Woman then created all planet beings and all animal beings and, then, of the four colors of the earth -- yellow, red, white, and black - she created beings which passed through the three phases or lights of the dawn of Creation. When humans were fully formed, she faced them to the sun. "This is your Father, the Creator," she said. "You must remember and observe the three lights of your creation, the dark purple, the yellow, and the red. For in these lights were the mystery, the breath of life, and the warmth of love."

Ko'kyangwu'ti then called for So'tuknang to give the beings speech, and wisdom and power to reproduce. And they began to do this, knowing all the while, that the earth was living like themselves. She was their mother, they were made from her flesh and they suckled at her breast. They knew that their bodies were of the same structure and function as their mother's body, constructed with an axis, five vibratory centers, entrances for life to enter the body (the ko'pavi - soft spot on the head), and later to exit the body, and a brain to carry out the plan of Creation. And also they knew that corn was living as they were living and corn built her flesh into theirs; thus they knew that corn was also their mother.

Of their father, they knew he was the sun but he was also greater than the Sun, looking through the face of the Sun, Taiowa, the Creator.

The first people understood the mystery of their parenthood. They knew that they were members of an earthly family and tribal clan, and that they were citizens of a great universe.

They were one, human beings and animals, corn, plants, and the earth. But soon the First People forgot, and when Lavai'hoya, the Talker, came in the form of a bird, it was easy for him to convince the human beings of the differences among them. The animals drew away in fear as people also divided and drew away from one another. They became suspicious, and even fierce and fought with each other. There was no rest and no peace.

Story 1/Handout 19

So came So'tuknang with the sound of a mighty wind announcing the displeasure of Taiowa and Taiowa's plan to destroy the world. So'tuknang spoke to those who had been chosen because they had lived by the law and told them to follow their inner wisdom and the lead of their own ko'pavi (vibratory center on top of their head). In this way, the believers were lead to a big mound where the Ant People lived. So'tuknang sent the people into the Ant kiva for safety and to learn the industriousness of the ants while he destroyed with fire, the First World.

From the womb of the earth where they had safely lived while the earth was purified by fire and cooled they emerged. Although the people felt close to him, So'tuknang had changed everything around, putting earth where there had been water, and water where land had been, so that they would have nothing to remind them of the previous world before he called the people into the Second World, whose direction is South and whose color is blue.

The people were separated from the animals who were wild and apart, and, soon, they began to separate from each other as well. They began to quarrel, to want more of what others had, and the wars between the villages began, and, on the report of Spider Woman that the Spider Clan leaders had led the people in the wrong way, So'tuknang came again to destroy the world.

Again those who obeyed the law were led safely into the Ant People's underground world. Here the chosen people waited as the twins made by Spider Woman were commanded to leave their posts and their earth, with no one to control it, teetered off balance, spun around crazily, and rolled over twice. The whole geography was thrown about and the whole thing froze into solid ice ending the Second World.

Underground, the chosen people shared with the Ant People in a warm place. They wove sashes and blankets together and told many stories until the twins were ordered again to their stations at the two poles. The earth shuddered, ice splintered, and the planet began to rotate again. When it warmed to life, the people climbed up the ladder of the Ant Kiva, through the n'uta-opening and into the Third World of Kuskurza, whose direction is East, and whose color is red.

In the First World, the people had lived simply with the animals; in the Second World they had developed handcrafts, homes, and villages. In the Third World, they multiplied so much that they created big cities, and again, more and more of them became occupied with their own earthly plans and fewer and fewer conformed to the plan of the Creator and fewer sang praises to Taiowa. Under the leadership of the bow Clan, they began to use their creative powers in evil and destructive ways. Sadly, So'tuknang came to Spider Woman and said, "There is no use waiting until the thread has run out for this world. We will help the chosen ones and then I will destroy the world with water."

Waves higher than the mountains rolled in upon the land. Continents broke apart and sank. But the people were sealed up in hollow reeds with huru'suki (white cornmeal dough), and, though they felt themselves tossed about, they were safe and had food.

When the movement ceased, Spider Woman pulled each one out from the reed by the top of his or her head and brought out the huru'suki which had not been diminished by the eating. From the reeds, they made rafts for one family or more, and they traveled east and north looking for the Fourth World. They were reminded that their inner wisdom would guide them, that the "door at the top of their heads was open." This they trusted, and on a gentle current, were guided to the Fourth World, Tu'wagachi, World Complete, whose direction is North, and whose color is yellowish white.

The Fourth World is not so beautiful as the previous three. It has height and depth, heat and cold, beauty and barrenness. From these, human beings must choose whether they will follow the plan of Creation or be also destroyed again. To help the humans, So'tuknang left Ma'saw, the caretaker and guardian and protector of the land, and told them that each group would have to follow their stars to the place where they would settle. All of the people went on migrations to the ends of the earth and back to carry out the plan of Creation from this Place of Beginning to the present time.



## Preparing For A Sing

One of the grandmothers who lived near Nazlini was ill. I came early for the healing Sing in order to visit the families of two of my students. The grandfathers who were going to kill the goat invited me to observe them. The goat was to be used during the sing.

One grandfather held the goat to himself while he sang a chant very softly. He knelt down and drew the goat's head onto his lap while he continued the chant. There was a large bowl near him which he placed between his knees.

While he continued his song he slit the neck of the goat. The goat was still as Grandfather took his life.

The blood was drained into the bowl and saved. The second grandfather helped with the rest of the butchering. Both men worked silently showing honor and respect. They quickly skinned the goat by cutting along the belly and down and around each leg. This enabled them to take the skin off in one piece which was dried and used as a rug.

They separated each part and organ of the goat: legs, head, ribs, backbone, hips, shoulders, heart, liver, intestines, stomach, integument. The bile glands and bladder were the only parts not used in some way. These were carefully removed and kept separate from the rest of the goat. Grandfather told me that if these were ruptured, the bile would spoil everything it touched.

The stomach, intestines, and blood were used to make sausage and pudding, the organs were grilled, and the integument and tripe were used as a tasty accompaniment to the liver. The ribs and legs were grilled and the neck and backbone went into the stew. The head was baked as a special treat. Everything was used to create a fantastic medley of food for all the people who were participating in the sing for Grandmother.

As told by Catherine Collier, a visitor to Nazlini.

# Evaluation Form - Trainer

Name of Unit: \_\_\_\_\_

Number of Participants: \_\_\_\_\_

Date of Training: \_\_\_\_\_

Location of Training: \_\_\_\_\_

Instructions: Please complete this form and mail along with participant evaluation forms after the training session.

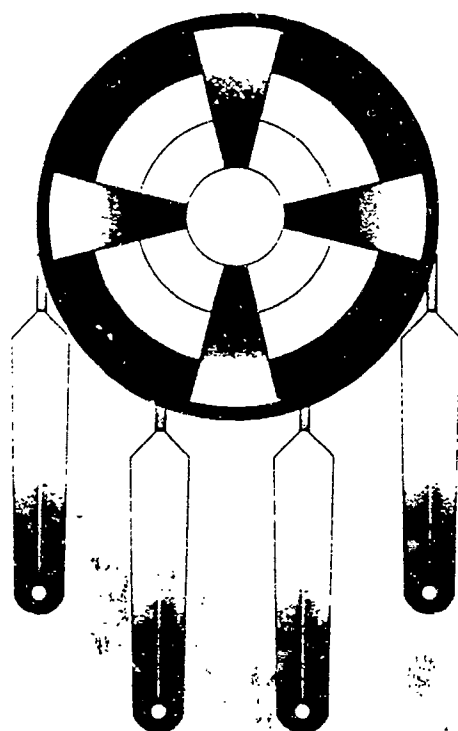
		strongly disagree		no opinion		strongly agree	<u>comments</u>
1.	The unit was easy to use during the training	1	2	3	4	5	
2.	The unit contains useful and appropriate overheads	1	2	3	4	5	
3.	The unit contains useful and appropriate handouts	1	2	3	4	5	
4.	The unit contains useful and appropriate supplemental readings	1	2	3	4	5	
5.	The content in the unit was easy to understand	1	2	3	4	5	
6.	The suggested activities and discussion issues in the unit were valuable to the training session	1	2	3	4	5	
7.	The questions in the "Participant Booklet" assisted in the overall training	1	2	3	4	5	
8.	The classroom application issues in the "Participant Booklet" were useful in the training	1	2	3	4	5	
9.	The unit's strengths are:						

(over)


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# Overheads

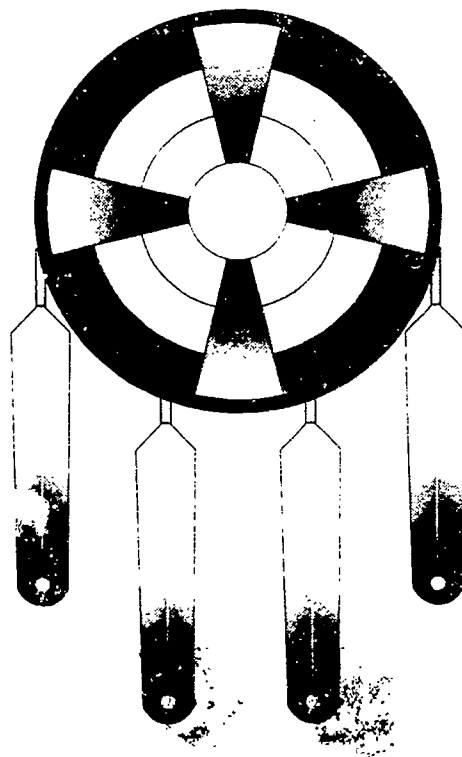
## Science of Alcohol Curriculum for American Indians (SACAI)



Bridging American Indian Culture  
and the New Science Paradigm

 AMERICAN INDIAN  
SCIENCE & ENGINEERING SOCIETY

# Science of Alcohol Curriculum for American Indians (SACAI)



Participant Booklet

Bridging American Indian Culture  
and the New Science Paradigm



AMERICAN INDIAN  
SCIENCE & ENGINEERING SOCIETY

RC018603

**Science of Alcohol Curriculum for American Indians:  
(SACAI)**

**Bridging American Indian Culture and the New Science Paradigm**

**Participant Booklet**

**Authors:** Cecelia Jacobs  
Carolyna Smiley-Marquez, Ph.D.

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1085 14th Street, Suite 1506  
Boulder, CO 80302

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## Preface

People generally learn best and retain more information when it is presented to them in a framework or context which makes cultural and social sense, which is relevant to them. In other words, learning is culturally specific. We retain and use information which reaffirms those things which we have already learned from our families, communities, and cultural and social heritage. If the content of a curriculum is culturally or racially biased, or rooted solely in the history, heritage, and language of a particular group, to the exclusion of others, then those outside of the system become crippled and disadvantaged in the process of learning. (Manning Marable, 1990; Baca and Cervantes, 1989; Collier and Hoover, 1987)

SACAI uses the Medicine Circle as means of addressing this issue. Although not all American Indian groups include the specific model of the Medicine Circle, the concepts of wholeness, interconnectedness and balance which it represents are consistent with most American Indian traditional ideals. Although distinctions in the symbol are made with lines, an understanding of interdependence and co-existing realities blurs these distinctions which are artificially imposed by the lines.

The four aspects of the Medicine Circle as studied in SACAI are physical, spiritual, mental and emotional. They are examined as they relate to individuals, families, communities and the world. These aspects can be described as follows:

- Physical - the tangible world we perceive with our senses;
- Spiritual - the innerconnectedness and interdependence of all of nature and the creator;
- Mental - experience of perceiving and processing information;
- Emotional - the feelings generated in reaction to perceptions.

Most American Indian cultures are congruent with and reflective of what is being called the new science paradigm. This new framework for science observation includes the understanding that the parts do not reveal the whole; the part is merely a pattern in an inseparable web of relationships. Another aspect of the new paradigm is the perception that everything is dynamic. The focus is on the processes through which structures interact rather than on the structures themselves. The observer is part of the universe which he or she observes and not an objective separate entity. And instead of arranging nature in a hierarchy of building blocks, the new paradigm describes a network of interrelationships in which nothing is more important than anything else. Mankind does not stand at the top of the pyramid of nature charged with "dominion over it", but is instead linked to all the elements of nature as in a web.

In both the new science paradigm and the Medicine Circle, the focus is on relationships and connections. The science of alcohol is studied from the integrative perspective of physical, spiritual, mental and emotional views in conjunction with the values of the new paradigm in order to explore a scientifically sound and culturally relevant understanding of the topic and issues.

Alcohol can be a difficult issue for both teachers and students to pursue. There are important physical, spiritual, mental and emotional components to this topic. Teachers need to address these various aspects from their own personal lives and be aware of their own issues before asking students to consider theirs. SACAI explores ways of doing this.

Teaching the science of alcohol to any group of students can be a delicate situation. American Indian communities, and therefore, American Indian children, suffer more from alcohol abuse than any other group in the United States. Many of them come from alcoholic families and alcoholic communities. In discussing

alcoholism, the teacher is often talking about people these students know and love. Given this situation, it is important to realize that the rubric of science will not erase the impact that alcohol has had on their lives. Looking at this concern from the perspective of science gives teachers the opportunity to teach about the effects of alcohol on the physical body. However, the other areas of the Medicine Circle cannot be ignored. And the concentric circles within the Circle representing the family, community and world can all be included in the science of alcohol because all things are related.

No two people perceive the world in exactly the same way, so no two cultural groups describe and experience the world in the same way. These differences are experienced as advantageous only if both are accepted and valued. In teaching the Medicine Circle and the new science paradigm, the current paradigm and formal reductionist science are not scorned; they are built upon, expanded upon and included in a wholistic framework. Application of SACAI in the classroom can be effective from this framework. Respect for a variety of points of view, including holism, is a way to share ideal traditional values that have never been incorporated in the formal educational process.

Upon completion of this unit, participants will have:

- examined their personal beliefs about and reactions to alcohol issues
- considered applications of the Medicine Circle to classroom experience
- reviewed the role of culture in the learning process
- studied aspects of the current science paradigm and the new science paradigm in order to understand implications for American Indian students.



## Section I

### Teaching about Alcohol Through the Medicine Circle

#### Overview

Many American Indian children are twice as likely to become alcoholic as children from the general population. It is important for teachers of American Indian students to know these risks and to be aware of typical coping mechanisms used by children of alcoholics. The Medicine Circle can be used as a model of wholeness and balance for building and expanding lessons in the classroom.

#### Outcomes

Upon completion of this section, participants will have:

- examined their own attitudes about alcohol and abuse
- been introduced to the Medicine Circle as an American Indian model of wholeness and balance
- discussed typical roles assumed by children of alcoholics as coping mechanisms

## Teaching About Alcohol Through the Medicine Circle

The prevalence of alcohol abuse among American Indians is higher than among any other group in the United States. Current information indicates that Indians have poorer health and are dying at far greater rates than the general U.S. Population. Indian children run twice the risk of becoming alcoholic than do children from the general population (NCADI, 1989).

Public education has typically failed Indians due in part to inadequate recognition of Indian culture. For example, science education typically reflects a curriculum based primarily on an essentially mechanistic, reductionist view of the world. This system is not compatible with the holistic view held by many Indian cultures, nor with the new science paradigm which reflects a holistic view toward the study of science (Vine Deloria, 1986). Teaching is most effective when it is presented in a context that makes cultural and social sense. People retain and use information which reaffirms those things they have already learned from their families, communities, and cultural and social heritage (Manning Marable, 1990; J. Cummins, 1984).

Learning and teaching about the science of alcohol -- the effects of alcohol on the body -- compounds the necessity for materials to be presented in a culturally-relevant manner. This is due to the very personal reactions and responses that the topic of alcohol and alcoholism can generate. The instructor must, therefore, be prepared not only to teach about such things as the metabolism of alcohol through the digestive system and the effect of alcohol on neurotransmitters in the nervous system, but he must be prepared to deal with social and psychological effects of alcohol drinking habits as well. He must be sensitive to differing cultural values about alcohol use, and differing values about the personal or public nature of alcohol use. (See Handout 1.)

There will be different levels of participation, certainly at first, when discussing alcohol use by individuals, in families, and in communities. There are factors that influence the participation level and openness of American Indian children. For example, questions might not always be asked. The tendency to ask questions is not as typical in many Indian cultures as in the euro-ethnic culture (Swisher and Deyhle, 1989). And sometimes the subject is so difficult to face that denial, silence and acting out will be the only "questions" the teacher hears. Sometimes, of course, questions and concerns will be expressed with varying degrees of frankness and openness. Teachers need to be able to respond appropriately to a full range of student needs.

Alcohol is often associated with family conflicts, abandonment, neglect, or abuse. Student reactions to these associations will vary widely depending on their personalities and experiences. Teachers need to be prepared, not with predetermined answers, but with well-thought-out attitudes and approaches.

It is important for educators to identify, clarify, and explore their own attitudes and feelings about alcohol and its use. They need to become aware of and comfortable with their own attitudes and drinking practices in order to respond with honesty to their students' needs and questions. Although factual information is important, students will be more influenced by a teacher's feeling about drinking and his ability to help them explore their feelings about drinking. In general, teacher attitudes and behaviors about alcohol are probably more important in affecting responsible attitudes among students than is knowledge of the facts about alcohol (Finn, O'Gorman, 1982).

An important issue for teachers to consider is how to teach about alcohol without bias. A teacher may have very little experience with alcohol or she may have an alcohol problem herself. She may be an adult child of an alcoholic or a recovering alcoholic. She may believe that drinking is a sin or a sign of weakness and inferiority. Perhaps she grew up believing that the use of alcohol is a typical part of the daily routine. What does she offer in the classroom with respect to her attitudes when she presents information about alcohol? In an article titled "Teacher Training in Alcohol Education", Finn and O'Gorman suggest defining objectivity in terms of what can be comfortably embraced and easily put into practice. Examples of unbiased approaches follow:

- 1) Remain publicly neutral about personal opinions regarding alcohol in order to avoid encouraging students to parrot back what they think the teacher wants to hear. Try to stimulate students to express and explore their own attitudes toward drinking. This requires acceptance and trust in the students' processes.
- 2) Acknowledge your own ambivalence regarding some issues involving alcohol. Use this ambivalence to explore issues with students.
- 3) Express opinions openly and honestly and encourage students to do the same (Finn, O'Gorman, 1982). (See Handouts 2 and 3.)

Indian thinking does not typically have the quality of absolutism or polarization that exists in other cultures. The concentric circles of the Medicine Circle used in this curriculum represent the world, community, family, and individual as a dynamic, interactive whole. (See Handout 4.)

The Medicine Circle is used throughout this curriculum to represent a holistic, contextualized interpretation of the world. Its message of balance and integration encircles and encompasses all of nature. It is more holographic than geometric, a sphere that is concentric and dynamic. The ancient symbol of the circle is found in some form in the symbolism of nearly every tribe in North and South America.

It is used to represent the dimensions of the interactions of human beings with themselves, with community, and with nature. There are four points on this circle representing relationships, such as: the four directions - east, north, south, and west; the four cardinal colors - white, yellow, red, and black; the four human races - white, yellow, red, and black; the four worlds of existence - vegetable, animal, mineral, and human; the four human environments - physical, human, self, and the unknown; the four dimensions of human understanding - physical, emotional, mental, and spiritual (Four Worlds Development Project, 1983).

Distinctions in the symbol are made with lines; however, Indian appreciation for interdependence and recognition of co-existing realities blurs the distinctions which are artificially imposed by the lines.

For example, the liver has functions which are dependent on the pancreas, and interdependence is evident between and among all body systems. The nervous system interacts with the reproductive system and the digestive system, and these interactions are as important as the systems themselves.

In the holistic approach, each "part" is important because of its specific function and contribution to the whole. No part of the body and no element in the universe exists or functions independently. The applications of this approach are relevant to the study of alcohol in American Indian communities.

In holistic systems, each aspect is important. If an individual's physical system is upset or damaged because of alcohol, she is also out of balance in other aspects -- mental, emotional, and spiritual. Just as she as an individual is affected, so is the family in which she lives. When families are out of balance, so is the community out of balance. When communities operate without regard for the mental, physical, spiritual, and emotional health of their members, the world experiences in that lack of harmony. The inverse is also true; when the community is healthy, that quality of health touches the individuals and families who make up that community and a healthy community affects the condition of all the world. Illness or wellness in any aspect of the Medicine Circle represents illness or wellness in all. Alcoholism is a disease that affects all of the areas and concentric circles within the Medicine Circle including the family.

A recent contribution to understanding the effects of alcohol on the family comes from family systems theory. Central to this view, which is in harmony with the Medicine Circle model, is the belief that changes in any part of the system (any family member) of necessity affect all of the others. If a parent begins to abuse alcohol, the rest of the family accommodates the drinking behavior in order to maintain a family structure and balance.

Alcoholism is often called the family illness, referring to the tremendous impact active alcoholics have on those around them. There is no way the family members can escape or ignore the alcoholic. The majority of the alcoholic's impairments are behavioral. So in the day-to-day interactions of family life, the family members are confronted with alcohol behavior, which initially may appear to have little connection to the drinking. The family is confused, bewildered, angry, and afraid. Because they act accordingly, their responses characteristically become as impaired as those of the alcoholic (Kinney and Leaton, 1987).

In American Indian families, particularly those on or near reservations, extended family interactions are frequently more integrated into the nuclear family than is typical of euro-ethnic families. The coping styles of children who deal with alcohol in their families apply to both the nuclear and extended families. Sharon Wegscheider-Cruse, president of a South Dakota firm that works with alcoholics, has identified four roles that children of alcoholics tend to adopt that help them to function within the family:

- 1) **Caretaker or family hero** takes on many of the responsibilities abandoned by the alcoholic parent. An overachiever, this child is always volunteering, very responsible and seems to be driven to be on top. He becomes his family's positive representative to the outside world. He is often a class leader. Sometimes he exhibits bossiness when dealing with other children.
- 2) **Scapegoat** is hostile and aggressive and uses negative behavior to gain attention. This child is more likely to have problems in school and to abuse alcohol and other drugs. She tends to talk back, neglect work and form strong peer alliances. The scapegoat takes the focus away from the drinker.
- 3) **Lost child** shields himself from pain by avoiding close interaction with family members and others. Quiet and shy, he is rarely a problem at home or school and may for this reason get lost in the shuffle.
- 4) **Mascot** provides comic relief. Often hyperactive and immature, she will do almost anything for an attention-getting laugh. She is fun to be around and is able to use charm and humor to hide her insecurity.

While these roles appear with usual regularity, they are not always in place or they may overlap. By recognizing these behaviors, teachers can identify and offer support to children who might otherwise be misinterpreted or fall through the cracks. The teacher's role can be very influential in the lives of these children. The Medicine Circle can serve as a framework for the teacher in addressing the mental, spiritual, emotional and physical needs of students. (See Handouts 5 and 6.)

## Questions

1. Why is it important for teachers to explore and define their own attitudes about alcohol use and abuse before teaching the science of alcohol?
2. Why might discussion of alcohol, even from a scientific point of view, be difficult for some students?
3. How does the Medicine Circle represent traditional American Indian thinking?
4. How can the Medicine Circle be used to describe the elements and interactions of a family? of a community? of the planet?
5. What are the four typical roles a child of an alcoholic might adopt as a coping mechanism?

## **Training Activities**

These training activities assist participants to understand and apply the content of this section. These may easily be adapted for classroom application with students.

1. Ask participants to design a Medicine Circle. Use these as decorations and reminders to think holistically.
2. Use a mobile to explain how a family (or community) maintains its balance and function. Remove a piece to show how other pieces must move to regain balance. Ask participants for other analogies that show balance and interconnectedness of systems.
3. Ask participants to form diads. One person assumes the role of the teacher. The other person assumes one of the four children of alcoholic roles. The "teacher" practices interacting with the "child" using the information and suggestions from Handouts 5 and 6.

Notes - Section I

## **Section II**

### **Points of Reference**

#### **Overview**

Each of us sees the world in a unique way. Attentiveness to our differences is necessary for effective communication. When educating students from different cultures it is important to be aware of these differences. Since culture is an integral part of self concept, teachers must incorporate elements and appreciation of all the cultures represented by their students into learning activities.

#### **Outcomes**

Upon completion of this section, participants will have:

- discussed personal differences in perception
- examined ways in which culture contributes to perception
- considered the effects on American Indian students of incorporating their culture into their learning experiences
- looked at unique ways American Indian students might react to a science lesson



## **A. Personal Framework**

Every person has a framework, a way of perceiving the world, that is unique. This perception is a composite of experiences, beliefs, values, culture, history, economics, language, etc. This framework or point of view is often challenged by new information and experiences, by exposure to other peoples' points of view, and by the need for reevaluation of beliefs and values. As a person grows and develops, so does the framework from which he knows his environment and his place within that environment. No one maintains exactly the same point of reference for long. And no two people ever have exactly the same perspective at a given point.

A stream flowing through an open meadow looks very different to various creatures. A beaver, an eagle, a deer, a woman, a fish, all have different perceptions of the stream. Descriptions would be contextualized in their own experience. A fish's description of the world might include much more detail about that which is below and reflected by the surface of the stream. It might emphasize those elements important to fish's survival such as food and flow.

Deer and woman, similarly, might emphasize elements in a manner influenced by their point of view. They stand above the stream. They can see its path for some distance. Their perspective includes elements around the stream. Trees, plants and berries, a nearby road, and even an airplane overhead contribute to their perception of the stream. These things provide a context in which the stream is understood. Of course, deer's description and woman's description are organized differently because of their needs and relationships with the natural environment and because of their different perceptual apparatus.

But even two women would not understand, see, or know the stream in the same way. One might feel it is a part of her and the other might fear it. One may think of it as a valued resource providing food and water for drinking, cooking, bathing or cleaning. She may consider it as recreational or a water route for travel by kayak or canoe. Her counterpart may feel it is dangerous because of unknown and unpredictable creatures who live in and near it. Or perhaps her most salient reaction is to the danger of drowning there. Each person's beliefs about reality and their experiences are unique.

Consider how the women's points of view might differ if they were presented an abstraction -- an idea, a theory. Their perceptions would likely be even more diverse than if the object of discussion were tangible. For example, considering the subject of alcoholism might for one woman be an intellectual exercise because she has had very little personal exposure to anyone who abuses alcohol. The other woman who might have grown up as a child of an alcoholic or whose children are perhaps experimenting with alcohol use might have a powerful emotional response.

These differences in perceptions of abstractions would likely be more difficult to discern than perceptions of tangible elements. Two people might know each other for a long time before they learn what each of them means by ideas such as alcoholism, social responsibility, commitment, biculturalism, happiness, openness, leisure, etc. The tendency of people to assume others share their exact definitions, concepts, ideas and experiences creates a lack of understanding and communication. A sensitive attentiveness to these differences is necessary for effective communication between any two people. This sensitivity becomes even more critical when communication is among people of different cultures. The teacher in the classroom cannot assume her students share her definitions or beliefs. This is particularly important for teachers of students who do not share her cultural background. (Handouts 7 and 8 will be provided by the trainer.)

## **B. Cultural Framework**

All human beings grow up in a cultural context. Culture is the integrated pattern of knowledge, beliefs, and behavior that influences the way a group of people respond to their environment.

Honest and sincere men ... continue to fail to grasp the true significance of the fact that

culture controls behavior in deep and pointing ways, many of which are outside of awareness and therefore beyond the conscious control of the individual (Hall, 1983). (See Handout 9).

Culture is unique from group to group. It is not learned consciously unless one enters an unfamiliar culture and had to learn how to function there. (See Handout 10.) Each person is born into a full, rich environment and, as Piaget suggests, each comes to understand the culture he is born into in more and more complex ways. The process of learning one's culture is called enculturation and may actually begin in the womb. A fetus can hear sounds before birth in the womb. He begins to perceive volume, rhythm, tone and timbre and associates different patterns as distinct from others. Children are enculturated into the patterns of a particular culture by interaction with parents, siblings, and other members of the family who play a significant role in their formation. (See Handout 11.)

Adapting to a different culture is called acculturation. Acculturation is the process of adaption to a new cultural environment through which people pass when they move from one culture to another (Padilla, 1980). Acculturation requires the contact of at least two autonomous groups; there must also be change in one or the other of the two groups which results from the contact. Typically, one group dominates the other and contributes more to the flow of cultural elements than does the other (Collier, 1985).

This domination has taken place in a variety of ways, for, as Parkman (1867) has noted, "Spanish civilization crushed the Indian; English civilization scorned and neglected him; French civilization embraced and cherished him." But in each case, a clear domination of indigenous life resulted (Padilla, 1980). Domination of one group over another suggests resistance and conflict. Groups do not lightly give up valued features of their culture. Teachers in classrooms with children from American Indian cultures should be aware of the conflict their students may be experiencing due to acculturation.

Like the two women at the stream, teacher and students may experience the process in the classroom very differently. If the teacher is able to gain an appreciation for this, less of the students' energy might be needed for adaptation and more energy may be available to enjoy learning. (This is the case for students from the euro-ethnic culture as well).

Of course, the classroom is not the only place acculturation occurs. In today's world, the media plays a major role in acculturation. Television, movies, radio, magazines and newspapers influence our perception of our environment and change our cultures. Batman and Dick Tracy t-shirts can be found in Alaskan villages, on reservations and in New York City. The voice of national radio and television is the same in Houston and Miami. To various extents, both enculturation and acculturation shape the identities of modern Americans (Collier, 1985).

Despite long term efforts of the government of the United States, American Indian communities have tended to remain identifiable as distinct groups. Partly because of the social and economic isolation of many reservations, acculturation has not been without conflict for Indian individuals, families and communities. The conflict many American Indians experience results in feelings of disenfranchisement and alienation, sometimes from both cultures. Alcohol is sometimes used to provide temporary relief from these feelings.

Alcohol and drug abuse serve the superficially useful function of dulling the pain, of clouding our vision so that we need not be confronted in every dimension of our lives with the frightening truth that we have nearly forgotten how to survive in this land (Four Worlds Development Project, 1983).

Frequently, when children from reservations attend school they experience cultural discontinuity. Indian children are reared within the context of their home cultures where traditional Indian language and values may exist in various ways and experiences. They start a socialization path (enculturation includes socialization) that begins with the attitudes, values and beliefs of their home cultures. Schooling traditionally

promotes a monocultural view of the world. American history is presented as though it exists for euro-ethnic males, for example. If the school and its classroom experiences ignore their home culture, then their socialization path is discontinued, disrupted, perhaps abruptly. These children begin to feel inadequate and unappreciated. They spend the school day ill at ease in an unfamiliar world. The message they hear is, "You do not fit. You do not belong. You should be different...."

So even if they begin, as every child does, learning how to make sense of this world, how to gain skills and knowledge that allow them to function in their culture, the school experience can undermine the confidence learned at home. If the school and the classroom experiences do not accommodate these Indian children's cultural backgrounds, more suffering than learning will take place there.

For example, the euro-ethnic culture in the United States supports individual competition and individual accomplishment over group cooperation and group success. In most American Indian communities, individual competition is not a traditional value. When a teacher does not understand this and sets up an atmosphere of individual competition within the classroom, frustration, fear, insecurity and confusion among Indians students can be the result.

...on the basketball court... they are competitive as can be. But in the classroom they don't want to compete against each other. I can ask a question and when a student responds incorrectly no other student will correct him. They don't want to look better than each other or to put another student down. The Anglo students are eager to show that they know the correct answer. They want to shine; the Indian students want to blend into the total class. (Swisher and Deyhle, 1989).

Typically, American Indians believe that people share a great deal with all other creatures in the universe. People belong to the universe. They have an integral place within the world. They are at home in this universe. Human beings have more in common with other human beings than with the universe at large. They are more like each other than they are like plants, rocks, or fish. They share humanness with fewer creatures. This shared humanness includes the capacity for language, humor, and sexual and social relationships. (See Handout 12.)

Cultural associations affiliate peoples with a more limited group. Specific language, senses of humor, values, assumptions, and behaviors are more closely associated with those who share a culture than with those who do not. The particular language(s) spoken, the expectations of themselves and others and even the way they greet each other identifies an affiliation with a particular culture.

American Indians share a common culture on one level and have unique cultures on another. There are over 300 different tribes or groups of American Indians in the U.S. (The Task Force on Women, Minorities and the Handicapped in Science and Technology, 1989). Throughout American Indian history, there have been cross cultural contacts allowing for miscegenation of blood and culture. The values, practices and beliefs that are common among the majority of tribes and groups can be referred to as Pan-Indian.

The Pan-Indian perspective is a traditional ideal which includes ways of being in the world that assume that all of nature is alive; a singular unity that is dynamic, aware, and interactive. It is characteristic of American Indians to value harmony and balance, both individually and collectively. At what might be called an intuitive level, they experience themselves within the whole of nature. (See Handout 13.)

...the primary assumptions tribes people make can be seen as stated only in that these people acknowledge the essential harmony of all things and see all things as being of equal value in the scheme of things... (Allen, 1986).

Indian people, to the extent that they are influenced by their traditional culture, do not experience the

oppositionalism, dualism, and separateness that characterize non-Indian thought. Traditional Indians, often even Indians who have been influenced by Western religions, assume themselves to be a part of a responsive and creative universe.

Often within the euro-ethnic culture there is a tendency to be one thing or another; for example, Christian or not, Democratic or Republican. The traditional Indian typically identifies with family and tribe or group. With the solidarity of that connection there is a confidence that allows for flexibility. This promotes a tendency to synthesize elements rather than choose between them. Change is seen as a constant and integration is a natural process. (See Handout 14.)

This is important information for the science teacher in an American Indian classroom since formal science examines the world through a process of separation, isolation, and dissection. This results in a description of the parts of things rather than the whole. From this perspective, functions are seen as mechanical. For example, the digestive system is typically described as a production line. Food passes through the alimentary canal, items are added the food is changed physically or chemically until the final product, energy, is produced and the by-product, waste, is eliminated.

Traditional Indian biological science and teaching respect the environmental context of the living organism. This allows for "knowing" an organism as it interrelates with the whole. Dissection, apart from food preparation, does not occur in this system of thinking.

This is not to say that all Indian children will be uncomfortable with dissection. Those who are may not know why they are. As Edward T. Hall noted, sometimes the role of our culture on our behavior is outside our awareness. The suggestion here is not to freeze Indian students in time by saying, "you do not dissect things because you are an Indian!" It is, instead, to understand why this experience might be more alien to Indian students than to non-Indian students and to help them bridge the gap between cultures.

If a lesson dealing with frogs is presented to Anglo and Native American students, their subjective reactions (positive and negative) to touching a frog will be derived not only from their individual personalities but from their cultural backgrounds as well. Beyond the rather specific issues of frogs, students from traditional Native American backgrounds might be more inclined to see scientific processes from a holistic point of view while students from mainstream Anglo-American backgrounds might be more interested in breaking down the subject into its smallest components (Ovando, 1988).

Like any other children in a classroom, Indian children need teachers who respect their individualism and understand their culture and background. Respect and understanding do not come easily when teachers are not members of the cultural group to which their student belong, but they can be developed through the use of cultural relativism as a teacher's guiding ethos (Garcia, 1988). (See Handout 15.)

Teachers who are aware of cultural differences manifested in the way their students learn and behave can support the learning of those students more effectively than teachers who only view cultural groups from their (the teacher's) perspective. Cultural relativism can provide a climate of acceptance for the cultures of Indian children. In addition, it allows teachers to approach a new culture with an open mind. Without it, teachers are likely to approach a new culture through their own cultural biases. (See Handout 16.)

Cultural relativism takes the attitude that cultures are different but not necessarily inferior or superior. Actually, cultures differ because groups of people develop them to accommodate unique ecological, demographic, and economic situations. Cultural relativism necessitates that we perceive cultures from their unique perspective rather than from the perspective of the euro-ethnic male, middle-class American culture, the cultural viewpoint most common in schools.

All too often we tend to view other cultures from the viewpoint of our own culture. Using

our own culture as the standard or model, we compare other cultures to our own culture.... Cultural relativism asks us to view other cultures from their viewpoint, and when they differ from ours, they merely differ. They are not to be perceived as superior or inferior....(It) can provide a climate of acceptance for the cultures of Indian children (Garcia, 1988).

This curriculum presents science concepts in the context of Indian culture. This will probably seem new, and in some cases peculiar, to non-Indian educators. Patience and openness will be required. The feelings and reactions associated with this experience should be remembered so that when teachers enter classrooms with children from Indian communities, they will be sensitive to their feelings and reactions to new models and frame works. To teach from an American Indian cultural context requires teachers to acculturate in a manner that is similar to the way that American Indians acculturate to non-Indian culture. The experience this curriculum provides will help teachers realize the extent to which classroom materials are a reflection of the euro-ethnic culture; how the way teachers teach reflects a style acceptable to the euro-ethnic culture; how assumptions about what students already know and how they learn best reflects the euro-ethnic cultural perspective. There is, of course, nothing wrong with the euro-ethnic cultural perspective. It is just not the only perspective. Both euro-ethnic and Indian perspectives (and by extension, all other cultural perspectives) are valued in these presentations and discussions. Formal science and traditional Indian perspectives come together for the benefit of people who represent both. (See Handout 17.)

Classrooms today are filled with a wide variety of students who reflect world views different from each other and different from their teacher. An openness and appreciation of this variety can be challenging both personally and professionally. The personal challenge comes in examining beliefs about cultural differences and facing prejudice. It is not easy to look for ways in which the lack of cultural relevance might surface in the classroom. This curriculum is designed to make that experience possible and to offer alternatives.

In general, educators have not learned from their experience as students in schools how to teach other cultures. Classrooms, from kindergarten to postgraduate, reflect the euro-ethnic culture. It is only recently that some institutions of higher education have begun to respond to the needs of a multicultural population. All too frequently, there is not any support for teachers reaching for a cultural balance in their classrooms. It is important that this be acknowledged and that the effort to bridge the gap between cultures not be minimized. It is also important to look forward to the "aha!" that will accompany the challenge of looking for answers in new places. Cultural relativism can be a key to a treasure chest of solutions and answers to situations that previously brought only frustration to students and teachers alike.

## Questions

1. What is the difference between acculturation and enculturation?
2. How does education in America typically fail to appreciate a variety of cultures?
3. How have American Indian Communities dealt with acculturation? What role does the education system play in acculturation for them?
4. What are some assumptions that a Pan-Indian perspective makes?
5. What is cultural relativism and how can it be applied to an educational setting?



## Training Activities

These training activities assist participants to understand and apply the content of this section. These may easily be adapted for classroom application with students.

1. Ask participants to write a short play that involves describing a stream from different points of view of animals and people who live near it. Apply this to exploring ways different people might view alcohol.
2. Ask participants to offer examples of cultural differences. Discuss why it is important to know and appreciate these differences.
3. Ask participants to draw concentric circles, the smallest representing the individual student and the largest representing the universe. Fill in the intermediate circles with a continuum of names of people or animals or objects. The smaller circles will be filled with people and things closest to and most like the participant. The larger circles will hold those considered more remote. Discuss how different participants see their world in different ways. Explore with the participants how an alcoholic might fill in the circles.
4. Ask participants to discuss how they might experience acculturation if they went to another country. How would they feel and behave? How might people who did not understand that they were experiencing acculturation interpret their actions?
5. Have participants spread out around room with some sitting on floor, some standing, some standing on chairs, etc. Ask them to describe the room or object from their point of view. In what ways are the descriptions different even though the subject is the same?
6. Divide the group into 2 parts. Call one part "tourists" and send them outside of the room. Have the other part of the group devise three simple rules that govern their "nation" (we always walk backwards, close our eyes while speaking, and hum while sitting). Invite the "tourists" into the room. How do they try to figure out what to do to fit into the "nation"? Is it difficult? Do the people of the "nation" feel that the tourists should be figuring out the rules faster than they are? Then have the two groups switch roles and come up with three new rules.
7. Divide the group into 2 sections such as people with younger siblings and people without, or people with dogs and people without, etc. Have each group make a list describing siblings or dogs, etc. How do the two descriptive lists vary? Discuss why they might vary.

**Notes - Section II**



## Section III

### Paradigms

#### Overview

The current model used by the Euro-ethnic community to explain the functions and interactions of the universe is the machine model. The body, for example, is viewed as a compilation of "parts", the heart is a pump, the brain is a computer. Although it is useful, this model or paradigm is limited. A new, more holistic paradigm that is more consistent with the Medicine Circle is evolving. Incorporating this new paradigm into the science classroom and drawing parallels to the Medicine Circle can be a powerful tool for educators of American Indian students.

#### Outcomes

Upon completion of this section, participants will have:

- been introduced to the concept of paradigm and paradigm shifts
- considered the limits of the current science paradigm
- explored some of the implications inherent in the new science paradigm
- looked for similarities between the Medicine Circle and the new science paradigm

## Paradigms

We know that beliefs about the world have changed over time. People used to think that disease was caused solely by sin. Epileptic seizures were considered to be demonic expression. Mental illness was considered to be communicable. The religious leaders, medical practitioners, philosophers, and scientists of earlier times behaved in ways based on those beliefs. Every theory, every plan, and every activity, was influenced by those beliefs.

The history of science, which is based on Newtonian mechanics, explains the universe as an immense and complicated machine. Its behavior can be understood by reducing wholes to parts. During the last three centuries, euro-ethnic science has been dominated by the Newtonian-Cartesian system of thought, based on the work of the British scientist, Isaac Newton and the French philosopher Rene Descarte (Grof, 1985). This model or paradigm offers explanations of non-living as well as of living things. Many of us can recall discussing our body as "a marvelous machine," our brain as a computer, and our digestive processes as analogous to an assembly line.

Based on this paradigm, even human nature has been reduced to the functioning of instincts and representations which are simply electrochemical reactions of the nervous system (Peat, 1988). In fact, Pierre Laplace, a 19th century mathematician, predicted a day when a single mathematical formula would be found from which everything in nature could be deduced (Briggs and Peat, 1984).

For the past twenty years, the terms paradigm and paradigm shifts have been associated with the work of Thomas Kuhn, a physicist and science historian who wrote The Structure of Scientific Revolutions (Kuhn, 1970a). Kuhn used the term "paradigm" to describe a general organizing principle which governed perception. It can be viewed as a "map" which predetermines not only WHAT scientists (and others) can see, but HOW they are supposed to see it. He defined a scientific paradigm as a constellation of achievements, shared by a scientific community and used by that community to define legitimate problems and solutions.

Broadly construed, a scientific paradigm is a set of explicit or implicit presuppositions or basic beliefs which are held by scientists and others to provide coherence to the picture they hold of the world and of how it works. A paradigm has a powerful influence on perceptions and interpretations of facts and events. This influence is usually not noticed except when contrasted with other paradigms; it is taken for granted and rarely questioned. It is handed down from one generation of scientists to the next. It is difficult to change and it is difficult for its proponents to accept another view. A paradigm can be compared to a pair of glasses. They are used to increase visual ability, but are rarely considered by the wearer as part of the view, even though they clarify, enhance, limit, and even color perceptions.

Scientists who accept the current paradigm, tend to think of themselves as objective observers, but this is not the case. In describing the world, they describe themselves. They see the world, not as it is, but as they are, or as they are conditioned to see it, according to their reality which is influenced by education, culture, history, experience, etc.

### A. Current Paradigm

The current scientific paradigm assumes that there is an objective universe which can be explored wholly by methods of scientific inquiry, and which can be approximated, progressively more precisely, by quantitative models. It assumes too that what is scientifically "real" must take as its basic data only that which is physically observable. This is the positivist methodology informing the "scientific method."

This paradigm ascribes to the reductionist assumption of explaining complex phenomena in terms of more elemental events. This scientific view requires the reduction of all organic and non-organic matter into basic components and their actions and reactions on the earth

to the most basic explanation (Harmon, 1988).

Using the scientific approach, any phenomenon could be isolated and analyzed under repeatable conditions until even the most complex of processes were reduced to a collection of known elementary units acting predictably as a result of the forces between them (Peat, 1988).

In general, the pervasive definition of how the world works has been a pragmatic and mechanistic one: (1) what is real is both discernible to the physical senses and is measurable; (2) the natural world is made up of "parts" which work together like a "machine"; (3) nature can ultimately be explained in terms of elementary happenings--there are primary building blocks on which all phenomena are based; and (4) there is an absolute reality, pragmatic and objective. This view made for a rational science which was distinguished by its lack of individualistic/subjective intervention or acknowledgement. This definition and the accompanying perspective have been very useful in scientific research, experiments, and studies. Modern research using the current paradigm has fostered growth in the theoretical, applied and practical including technological areas of all scientific disciplines.

## **B. Paradigm Shift**

Beginning around the turn of the century, scientists and nonscientists began to consider the possibility that the paradigmatic frame of current science was too narrow to accommodate observed anomalies in the human experience. Anomalies which question the ability of a paradigm to order and give meaning to the world are the first stage of a paradigm shift.

Stanislav Grof, author of Beyond the Brain, noted:

Newtonian-Cartesian science has created a very negative image of human beings, depicting them as biological machines driven by instinctual impulses of a bestial nature. It has no genuine recognition of higher values, such as spiritual awareness, feelings of love, aesthetic needs, or sense of justice. All these are seen as derivatives of base instinct, or compromises essentially alien to human nature. This image encourages individualism, egoistic emphasis, competition, and the principle of "survival of the fittest" as natural and essentially healthy tendencies. Materialistic science, blinded by its model of the world as a conglomerate of separate units, has been unable to recognize the value and vital importance of cooperation, synergy, and ecological concerns (Grof, 1985).

Dr. Vine Deloria, J.D., Professor of American Indian Studies at the University of Colorado, says of this reductionist view of the universe:

We can look at phenomenon with a completely rational and objective eye and find abstract principles underlying all behavior from atoms to masses of people. This perspective implies, of course, that the natural world and its inhabitants are wholly materialistic and that even the most profound sentiments can be understood as electrical impulses in the brain or as certain kinds of chemical reactions. We have arrived at this state of affairs through the application of a methodology of reductionism, a tendency to divide, subdivide and subdivide again in order to find the constituents of an entity or event (Deloria, 1990). (See Handout 18.)

Other scientists have observed that, in adhering to the current scientific paradigm, they are missing something important, namely, that consciousness and conscious awareness are causal realities acting on our experience of the world--that, like it or not, there is a subjective element to our sciences.

Morris Berman, in The Reenchantment of the World describes the loss of our belief about the interconnectedness and co-participation of living and non-living things in our world as a loss of enchantment.

At least in theory, the reference points for all scientific explanation are matter and motion - what historians of science refer to as the "mechanical philosophy." That mode can best be described as disenchantment, nonparticipation, for it insists on a rigid distinction between observer and observed. Scientific consciousness is alienated consciousness: there is no ecstatic merger with nature, but rather a total separation from it. Subject and object are always seen in opposition to each other. I am not my experiences, and thus not really a part of the world around me. The logical end point of this world view is a feeling of total reification: everything is an object, alien, not-me; and I am ultimately an object of, an alienated "thing" in a world of other, equally meaningless things. The world is not of my own making; the cosmos cares nothing for me, and I do not really feel a sense of belonging to it. What I feel, in fact, is a sickness in the soul (Berman, 1984).

It is critical to recognize that to various degrees we have inherited this particular world view. It has had a profound effect on our whole lives: it guides our thinking and sorting, it permeates our attitudes about self, others, community, society, government, and human relationships, and it persuades us to believe that every adverse situation can be analyzed and every problem can be isolated and that there is an answer--one right answer--for everything that acts on us. It reaches beyond our intellectual defenses and effects our faith in the tangible and in the intangible. It orders time and nature in a way which can be manipulated, mined and altered.

The reductionist perspective offers the possibility of primary and definitive explanation for the basic mechanics of the universe, the solar system, even human genetics. It has been applied to the continuous motion of fluids and thermodynamics and to systems and processes within the human body and mind. It was the moving force behind the progress of the natural sciences of the 18th and 19th centuries (Grof, 1985).

There is considerable adherence to the current paradigm in the scientific community, to be sure, but there are others who believe that there is a randomness to reality, a chaotic and erratic unpredictability, that exists before and beneath the order which we have imposed upon it through our academic definitions and that can only be understood through a subjective, personal, and intuitive relationship with nature, self, and community.

Fritjof Capra, author of the Tao of Physics and The Turning Point, describes the current paradigm as viewing the universe as a mechanical system composed of elementary building blocks. The body is seen as a machine. Life is a competitive struggle, and unlimited material progress is an inalienable right. He said, "During recent decades, all of these assumptions have been found to be severely limited and in need of radical revision" (Capra, 1987).

Max Weber, in his classic essay, "The Protestant Ethic and the Spirit of Capitalism", says of scientists in the current paradigm, that they are "specialists without spirit; sensualists without heart; this nullity imagines that it has attained a level of civilization never before achieved". If "living systems," said Berman in Reenchantment, "are in principle reducible to inorganic matter, nature is ultimately dead" (Berman, 1984).

Capra, says of the reductionist interpretation that "We are trying to apply the concepts of an outdated world view. The mechanistic world view of Cartesian-Newtonian science applies to a reality that can no longer be understood with these concepts". He suggests that what we need, then, is a new paradigm, a new vision of reality. He suggests a change for formal science that embraces concepts that are an integrated part of American Indian culture. In a tangible sense, the Medicine Circle is replacing the machine.

### C. New Paradigm

A new paradigm is emerging. It is holistic and recognizes the fundamental interdependence of all phenomena and the embeddedness of individuals and societies in the cyclical processes of nature. It is consistent with the philosophy and cosmology of American Indian traditions (Capra, 1983). People are beginning to question the strategy of manipulation and control of the material world and turning within themselves for answers (Grof, 1985).

In a fundamental sense which many people in science do not yet recognize, the theories of Albert Einstein's work challenged the absolute status of space, time and matter and his major contribution was to reduce the absolute nature of these ideas to a relative status--he introduced the context into modern science in a way that could not easily be refuted. But the importance of relativity for traditional thinking is that it began to shift the focus from the absolute materialistic framework science had constructed to an idea that things are related. Not many people in the academic community have yet applied this idea to the world as a totality and certainly many of them would rebel at the idea that science is shifting significantly toward a tribal understanding of the world. They continue to believe that relativity means that there are no absolutes. In fact, it means that things are related in some fundamental ways that had previously been excluded (Deloria, 1990).

Today, the reductionist paradigm of formal science is being examined by scientists. The observers are taking off their glasses and looking at the glasses themselves. They are recognizing that there is a cultural, subjective, predeterminate aspect to science. When glasses serve their purpose, the wearer doesn't think about them. But when something doesn't "look" quite right, attention is drawn to them. They may simply need cleaning, or the wearer may, in fact, need a completely new prescription. The reductionist paradigm, the current paradigm, doesn't look quite right to contemporary scientists. New scientific scenery is out of focus when one depends only on the old lenses.

The seeds for change were themselves born out of science, of course. Recent discoveries in cell biology and genetics, for instance, reveal an astonishing autonomy, a strange molecular freedom of action at a cellular and subcellular level which makes a mess of mechanistic theory. As Watson says in *Lifetide*, "It is a wonderful mess because it demonstrates, just when we needed reminding, that we and our life systems are very much more extraordinary than many will allow." (Watson, 1979).

We are learning that there are realities which exist beyond rational existence. There is a pulse of life that is understood only through the intuitive, through creative insight, through a deliberate intimacy of the human observer with nature.

One scientist who demonstrates a holistic approach is philosopher-biologist, Barbara McClintock. She points out about the plants she studies, that

...no two plants are alike. They're all different, and as a consequence, you have to know the difference. I start with a seedling, and I don't want to leave it. ... One must understand how it grows, understand its parts, understand when something is going wrong with it. You need to have a feeling for each individual plant. (Keller, 1983).

She describes her appreciation for the uniqueness of each plant as a "feeling for the organism". It was from this conviction of the "oneness of things" and her personal emotional involvement with the science that McClintock began to study the mystery of genetic organization--seeing the way in which the cytoplasm, membranes, and DNA are integrated into the single structure of the cell nucleus. As a result of her passion and reverence for nature, she has been persistent in her synergic approach to science.

Congruent with the Medicine Circle, a holistic paradigm centers on relationships and connections beyond the

physically observable. Non-Indian science has recently come to acknowledge that natural organisms have, in addition to a form of order that can be observed and documented, many qualities that can only be seen through intelligent belief. There is much that exists which scientists have only begun to describe and understand and the mental strategies which are being used are more and more similar to Indian science.

#### D. The New Paradigm and American Indian Culture

As the Medicine Circle demonstrates, there is not a hierarchal structure to Indian science. The knowledge, intuition, and practices engaged by Indian science are noncompeting and cooperative. They are interrelated and interdependent. There is, however, to a lesser extent than in the non-Indian community, some specialization among scientists and practitioners.

The wealth and profound knowledge in ancient spiritual traditions over centuries has not been adequately acknowledged, explored and integrated by formal western science.

Indian metaphysics was the realization that the world, and all its possible experiences contributed a social reality, a fabric of life in which everything had the possibility of intimate knowing relationships because, ultimately, everything was related. This world was a unified world, a far cry from the disjointed and sterile world painted by western science (Deloria, 1986).

A well-ordered humanism does not begin with itself, but puts things back in their place. It puts the world before life, life before man, and the respect of others before love of self. This is the lesson that the people we call "savages" teach us; a lesson of modesty, decency and discretion in the face of a world that preceded our species and that will survive it (Levi-Strauss, 1972).

Recurring through all this is the attitude of humility and respect toward reality, toward nature and society. I cannot find an adequate English term to apply to a habit of thought which is so alien to our culture. We are aggressive toward reality. We say, This is bread; we do not say like the Wintu, I call this bread, or I feel or taste or see it to be bread. The Wintu never says starkly this is; if he speaks of reality which is not within his own restricting experience, he does not express it, he only implies it. If he speaks of his experience, he does not express it as categorically true. Our attitude toward nature is colored by a desire to control and exploit. The Wintu relationship with nature is one of intimacy and mutual courtesy. He kills a deer only when he needs it for his livelihood, and utilizes every part of it, hoofs and marrow and hide and sinew and flesh. Waste is abhorrent to him, not because he believes in the intrinsic virtue of thrift, but because the deer had died for him. A man too old to fend for himself prays:

...I cannot go up  
to the mountains  
in the west to you,  
deer; I cannot kill  
you and bring you  
home...You, water,  
I can never dip you  
up and fetch you  
home again...You  
who are wood, you  
wood, I cannot  
carry you home on  
my shoulder (Lee, 1975).



The notion that formal science is moving toward a more holistic understanding of the universe is an important tool for teachers of American Indian children. These children, to the degree that they are in touch with their own traditional American Indian culture, have lessons to teach us about the application of the new paradigm. Teachers have a powerful tool in this understanding: a tool that can be used to foster pride and self worth. These children and their families have a cultural perspective that can offer the world needed insights and views that are becoming more and more necessary.

In addition, people learn best and remember more when information is presented to them in a framework or context which makes cultural and social sense, which is relevant to them. The convergence of the new science understanding of the world and Medicine Circle offers educators an opportunity to effectively integrate culture and curriculum with a sense of respect and sensitivity.

## Questions

1. What are some characteristics of the Newtonian-Cartesian system of thought?
2. What is a paradigm? a paradigm shift?
3. How is the paradigm shift in science consistent with Pan-Indian perspectives?
4. How does the Medicine Circle demonstrate concepts of the new paradigm?
5. How can the new paradigm shift be useful to teachers of American Indian students?



## Training Activities

These training activities assist participants to understand and apply the content of this section. These may easily be adapted for classroom application with students.

1. Explore with participants the idea "we see what we're looking for". People who own silver Blazers "see" more silver Blazers than those who don't. How can this be explained?
2. Ask participants to consider the machine model of nature. Explain the uses and limitations of this model. Ask them to come up with other models. What model might someone addicted to alcohol come up with?
3. Discuss with participants how a teacher might experience a paradigm shift by hearing new information about a student (e.g., the student has an alcoholic parent.) How might that shift in thinking translate into action. How might the shift in the teacher's thinking eventually bring about a shift in the student's thinking and behavior?
4. "All things are interrelated. Everything in the universe is part of a single whole. Everything is connected in some way to everything else. It is therefore possible to understand something only if we can understand how it is connected to everything else." (The Sacred Tree: Reflections on Native American Spirituality). Ask participants to relate the meaning of this quotation to the Medicine Circle, the new science paradigm, the concept of cultural relativism, and family systems theory.
5. Ask small groups of participants to write a play or short story with two protagonists: One is a doctor whose perspective is consistent with the Medicine Circle, the other is a doctor whose thinking reflects the current paradigm. They are both well-intentioned professional people who are working in an alcoholic community. Create a plot that shows how they learn from each other and are changed because of their openness to their differences.

### Notes - Section III

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## Unit Handouts

1. North American Fruit Juice Producers' Survey
2. Positions on Alcohol Use
3. Alcohol Discussion Questions
4. Medicine Circles
5. Identifying Children of Alcoholic Parents
6. Suggestions for Teachers for Supporting Children from Alcoholic Families
7. (To be distributed by Trainer)
8. (To be distributed by Trainer)
9. Letter Written by an Indian Parent
10. The Two Worlds I Live In
11. Some Effects of Acculturation
12. Each Person is Like...
13. Perspectives of Nature
14. Learning Style Comparison
15. Cultural Relativism and Ethnocentrism
16. Cultural Relativism
17. Teaching Children Science: An Inquiry Approach
18. Axioms About Current Paradigm and Emerging Paradigm
19. Story 1 - Hopi Creation Story: The Four Worlds
20. Story 2 - Preparing for a Sing

## North American Fruit Juice Producers' Survey

Names of Persons Surveyed:

Place of Employment:

A. \_\_\_\_\_

\_\_\_\_\_

B. \_\_\_\_\_

\_\_\_\_\_

C. \_\_\_\_\_

\_\_\_\_\_

1. How much fruit juice do you drink each day?

- A.
- B.
- C.

2. What time of day do you tend to drink fruit juice?

- A.
- B.
- C.

3. How have your fruit juice drinking habits changed over the last ten years?

- A.
- B.
- C.

4. Do you feel you should change your fruit juice drinking habits?

- A.
- B.
- C.

5. How much money does your household spend on coffee per week?

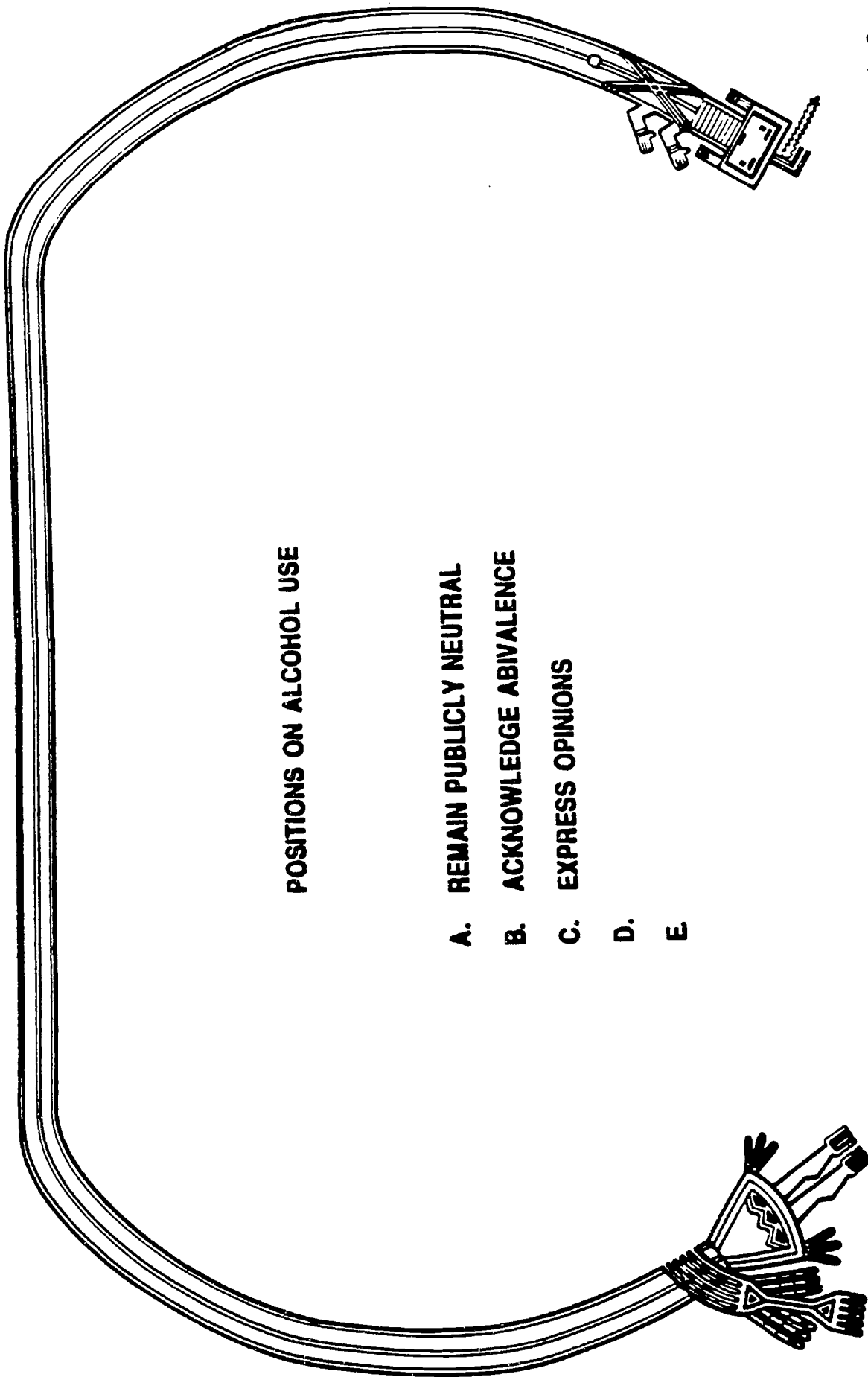
- A.
- B.
- C.

Handout 1



**POSITIONS ON ALCOHOL USE**

- A. REMAIN PUBLICLY NEUTRAL**
- B. ACKNOWLEDGE AMBIVALENCE**
- C. EXPRESS OPINIONS**
- D.**
- E.**



Handout 2

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## Alcohol Discussion Questions

How strong is peer pressure among adolescents to drink? Does pressure to drink exist for adults? Can the two be compared?

Should teachers present or have students research the pleasure many people derive from drinking alcohol?

How should people respond to a pregnant woman who drinks?

Is it ever okay for people to drink before they are adults? When?

How can a teacher handle questions regarding other school staff members who seem to overuse alcohol?

How can moralizing be avoided? Should it be avoided?

Might drinking attitudes and practices of teachers affect their ability to teach about alcohol?

Why are denial and alcohol so intertwined?

What stereotypes do students have regarding alcohol use among the following: men versus women, young versus old, Indian versus non-Indian, successful versus unsuccessful, urban versus rural?

Do youths take more risks when they drink than do adults? Is the reverse ever true?

Are there ever good reasons for getting drunk? Are there times when drunkenness is accepted? expected?

Should American Indian students study statistics that compare alcohol use among Indian groups with the euro-ethnic culture?

How can misinformation or poor advice given to a student from a parent or community member be corrected?

What does someone have to be like to be an "abuser of alcohol"?

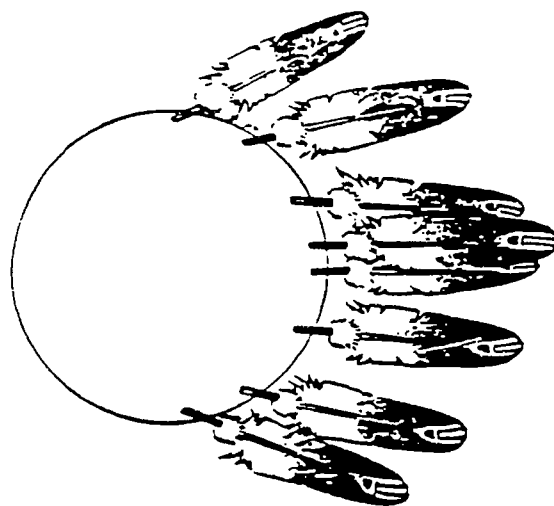
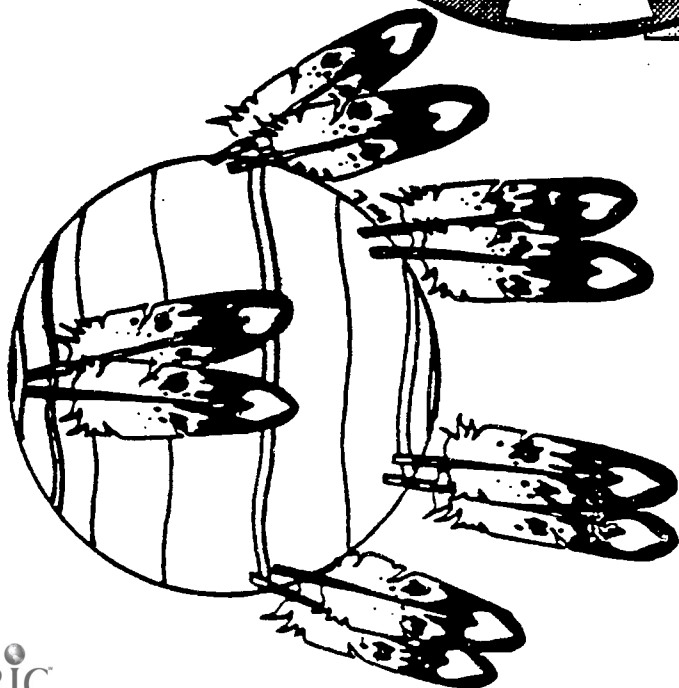
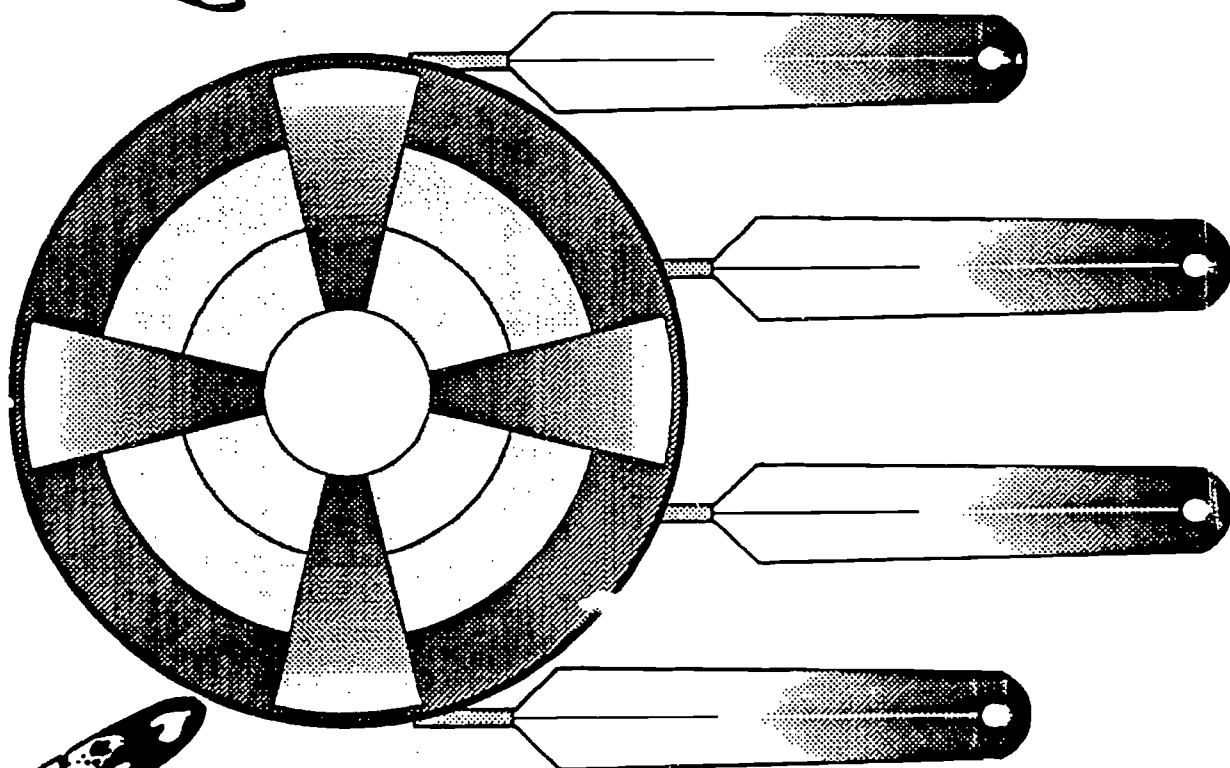
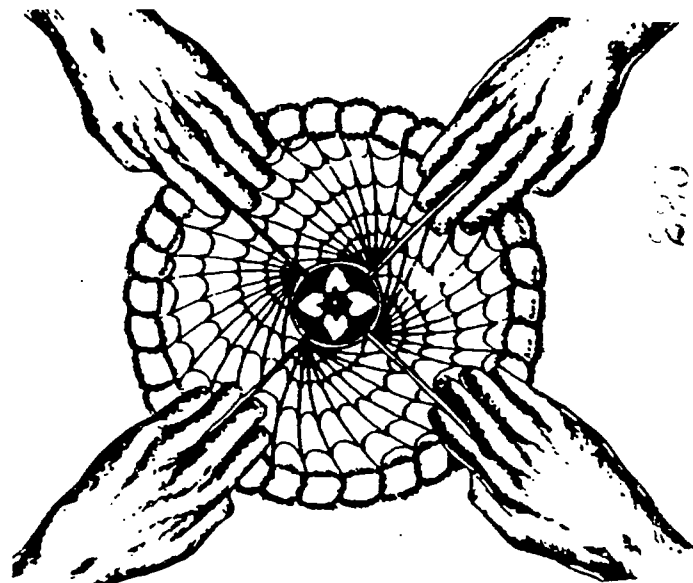
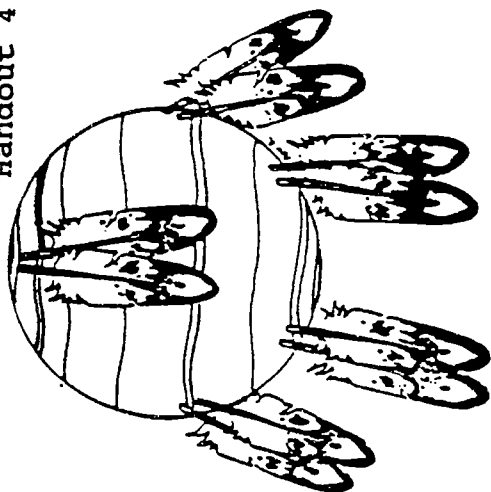
Should adults with drinking problems and youths with drinking problems be viewed differently?

How can teachers present to students reasons why some people drink and others abstain?

Adapted from "Teacher Training in Alcohol Education: Goals, Approaches, and Content" in Journal of Drug Education 12 (3), by Peter Finn and Patricia O'Gorman, Baywood Publishing Company, Amityville, NY, 1982.

Adapted from Teaching About Alcohol: Concepts, Methods, and Classroom Activities, by Peter Finn and Patricia O'Gorman, Allyn and Bacon, Inc., copyright 1981.

# MEDICINE CIRCLES



## Identifying Children of Alcoholic Parents

This list includes characteristics that are often associated with children of alcoholics and their behavior in the classroom. It should be used only as an indicative measure to monitor patterns, not as a means to relate isolated incidents or traits to a cause.

### General Characteristics:

Unkempt/unclean

Consistently late to school

Loner

Frequently absent

Immature and regressive behavior

Lethargic

Non-confrontational/adamantly avoids conflict

Emotionally unpredictable and prone to outbursts

Short attention span/lack of focus

Elusiveness and fear regarding issues or events that involve parents

### Characteristics During Alcohol Education:

Pays uncharacteristically close attention to alcohol discussions

Has only negative things to say about alcohol and alcoholics

Refers to drinking problem of "friend" or "friend's relative"

Finds excuses to linger in classroom after alcohol discussion or lesson

Is very familiar with alcohol varieties and terms

Associates alcohol with drunkenness

## **Suggestions for Teachers for Supporting Children from Alcoholic Families**

### **For the Caretaker or Family Hero:**

- \* Assist this child in coming to understand that it is okay to make a mistake
- \* Show the child that his self-worth is separate from his accomplishments
- \* Respond to him at times when he is not being actively responsible
- \* Avoid letting the child monopolize conversations
- \* Encourage him to relax, have fun, feel comfortable asking for help, and be spontaneous

### **For the Scapegoat:**

- \* Let this child know when behavior is not appropriate
- \* Reward her for taking responsibility
- \* Avoid reacting to her with anger or defensiveness by developing an empathetic understanding of the fears and needs her behavior exhibits
- \* Do not treat the child as special thereby giving her more power
- \* Encourage her to express anger constructively
- \* Help her find ways to express her hurt feelings

### **For the Lost Child:**

- \* Look for the lost child in your classroom and give him individual attention
- \* Point out his strengths and abilities to him
- \* Encourage him to share ideas and interests
- \* Encourage working in small groups to help build trust
- \* Avoid letting him remain silent
- \* Encourage him to identify his wants and needs
- \* Help him feel that he is important and that he deserves attention

### **For the Mascot:**

- \* Show disapproval of inappropriate "class clown" behavior
- \* Give her a job in the class with some importance or responsibility
- \* Encourage an appropriate sense of humor
- \* Remember this behavior often hides depression and fear
- \* Discuss a variety of ways to deal with conflict with her
- \* Encourage her to accept help from others
- \* Assist her in focusing her attention on herself and her needs and concerns

## Letter Written by an Indian Parent

Dear Teacher,

Before you take charge of the classroom in which my child is enrolled ask yourself why you are going to teach Indian children. What are the stereotypes and untested assumptions that you bring with you into the classroom?

What values, class prejudice and moral principles do you take for granted as universal? Please remember that "different from" is not the same as "worse than" or "better than", and the yardstick you use to measure your own life satisfactorily may not be appropriate for their lives. The term "culturally deprived" was invented by well meaning middle class whites to describe something they could not understand.

Many teachers, unfortunately, seem to see their role as a rescuer. My child does not need to be rescued; he does not consider being Indian as misfortunate. He has a culture older than yours; he has meaningful values and a rich and varied experiential background. However strange or unbelievable it may seem to you, you have no right to do or say anything that may imply to him that it is less than satisfactory.

Like most Indian children his age, he is competent. He can dress himself, prepare a meal for himself and clean up afterwards, and care for a younger child. He knows his reserve like the back of his hand, all of which is his home. He is not accustomed to asking permission to do ordinary things that are part of normal living. He is seldom forbidden to do anything, more usually the consequences of an action are explained to him, and he is allowed to decide for himself whether or not to act.

He is not self-conscious in the way white children are. Nobody has ever told him his efforts towards independence are cute. He is a young human being energetically doing his job, which is to get on with the process of learning to function as an adult human being. He will respect you as a person, but he will expect you to do likewise with him.

He doesn't speak standard English, but he is in no way linguistically handicapped. If you will take the time and courtesy to listen and observe carefully, you will see that he and the other Indian children communicate very well among themselves and other Indians. They speak functional English very effectively increased by their fluency of facial expressions, gestures, body movement and the use of personal space.

Will you help my child learn to read, or will you teach him that he has a reading problem? Will you help him develop problem-solving skills or will you teach him that school is where you try to guess what answer the teacher wants? Will he learn that his own sense of value and dignity is valid, or will he learn that he must forever be apologetic and "trying harder" because he isn't white? Can you help him acquire the intellectual skills he needs, without at the same time, imposing your values on top of those he already has?

Respect my child. He is a person. He has a right to be himself!

Yours For More Native Awareness,

reprinted with permission from:  
North American Indian Traveling College  
R.R.3, Cornwall Island

## The Two Worlds I Live In

As a Native American pursuing a college education, I live in two worlds, traditional and modern. On the Arizona Navajo reservation, amidst the dry vast area, protected by juniper trees and an arid vegetation, my parents live in a shack made out of twigs, with a round earth hogan, by a corral of sheep. These are my parents' property and value. In a city called Boulder in Colorado, on the C.U. campus, I study and reside as a student. My class attendance and performance are most important to me. Transition from one world into another is easy for me, since I am familiar with both worlds. However, there are a lot of differences between the two worlds.

There is a big difference in waking up in the two worlds. Before the sun peaks over the "missing tooth hill," I wake up to the crow of the rooster. The atmosphere is quiet. "The good spirits only give blessings at this time," is my mother's motto. If there is a sound to be heard, it is of the birds singing among the juniper trees, a sheep bleating, and a soft movement of a cowbell worn by a sheep; this sheep is known for its tardiness when out in the pasture. The air is thin and carries a scent of juniper. In the modern world, I wake up to the alarm, at any hour according to my class schedule, instead of the rooster. There is usually more noise here, noise from other alarm clocks, doors slamming, groans, toilets swooshing, showers running, and hair dryers going in first gear. From outside, there are cars starting, the clanking of machinery, and an ambulance screaming to the north. I wake to a quiet atmosphere and clean air in the traditional world, but not in the modern world.

There are chores I do in the traditional world throughout the day, especially in the morning; whereas, there are really no chores in the modern world. The traditional morning chores usually are chopping wood for fire, hauling wood to a spot near the twig shack, and making a trip to the water barrels. I build the fire and set a tea kettle of water over the open fire for coffee. In college, I would still be sleeping instead of working as I do back home.

Grooming in the traditional world and modern world differs for me also. At home, "the behind the bush activity" is done in place of going to the restroom; any place is fine just so the bush or hill is high enough to provide privacy. On campus, I just find a sign with the word "women" on it, before I can go to the bathroom. Wearing clean clothes for the day does not matter in the traditional life. I wear the same outfit of clothes worn as pajamas last night for the coming day. In the modern life, I brush my teeth and shower before dressing in my clean clothes. These clean clothes are worn for one day, then discarded in the laundry basket. Showers are not necessary at home either; a splash of cold water on the face is enough to get clean.

The food prepared in each world also differs. Meals on campus are planned carefully by people who are experts in nutrition. The food is balanced, fancy, and it varies daily. There are hired chefs who prepare these meals. At home, my meals are cooked by my mom. They are neither balanced nor fancy, but what really matters is that they satisfy my hunger. She (my mom) prepares these meals according to what is affordable and available. The three basic meals generally consist of hash browns with meat scraps, fried bread, coffee, and occasionally a can of fruit. Meals in the dorm are of steaks, meatloaf, salads, milk, fancy pastries, and unheard of desserts.

There are major tasks in both worlds--classes and sheepherding, but each requires a different activity. Sheepherding requires a lot of walking on my part as the shepherd. The walking distance depends on the grazing need for the sheep; if there is not much grass in one place, then I usually take them two or three miles farther. Attending classes is the major activity during the day on campus. I walk to my classes, but less walking is required here and I become immobile in class. I attend lectures and participate in discussions; whereas, when I'm herding sheep, I am not required to say a single word the whole day. When out in the pasture with the sheep it is so quiet I scare myself often if a pebble stirs beneath my feet. I find it amusing to watch lizards tanning themselves in the desert sun, and sheep munching on grass. When I am on campus my mind is mentally active, and when herding sheep I am physically active.



Upon returning to my mother's place with the sheep, my mother is always interested in my day with the sheep. "Did the sheep behave? Was there plenty of grass at the place where the flock grazed?" She also asks how I am physically, meaning whether I was fit for the chore or my legs were still in good shape for walking. She is a symbol of security and love to me. Meanwhile, the atmosphere at the dorm after class is usually different from the above. "How was your day, man?" is usually asked by a close friend. I could tell them about my day like I told my mom, but they go through almost the same routine as I do on a week day. The question also lacks concern and interest. So I respond with a not so lively flat, "fine." They complain about their paper, labs, and tests, not caring about how I am doing. My mom and I have a close relationship, and my friends and I have a different one.

There is a different way of ending a day in both worlds. Since there are no lights in the traditional world, with an exception of a kerosene lamp, the sun determines sleep time here. As soon as the sun starts to set, bedding is laid out on the ground of the hogan. The bed is made out of sheepskins and checkered quilts, sewn together out of rags given to my mother by a church group. (At the dorm I sleep on a mattress with a clean lining.) The kerosene lamp is blown out. All is quiet in the dark hogan, but there are sighs and stirs once in a while. The bleating of a lamb is heard from the corral, but he finds his mom and settles down; meanwhile, there are lights still on in the building on campus. Life is still stirring. Students are studying, typing papers, and conversing. Stereos and radios are still a-rockin' and talking. The telephones are still ringing at eleven-thirty p.m. Exactly what hour I go to sleep is unpredictable in this world. Come three a.m., there is usually someone, even myself, still clicking away at a typewriter. The sun determines when it is time for sleep in the traditional world, but my studies and clock determine my sleep in the modern world.

Although I feel uncomfortable in both worlds--modern and traditional--if there was a decision between these two, I would sacrifice the modern world. Being an Indian, I prefer to follow the red road with my stinky moccasins; this leads to my people and our nation.



# **SOME EFFECTS OF ACCULTURATION**

**HEIGHTENED ANXIETY**

**CONFUSION IN LOCUS OF CONTROL**  
(perception of control as internal or external)

**WITHDRAWAL**

**UNRESPONSIVENESS/SILENCE**

**CODE SWITCHING**  
(substituting sounds, words, or syntax elements)

**DISTRACTIBILITY**

**RESISTANCE TO CHANGE**

**DISORIENTATION**

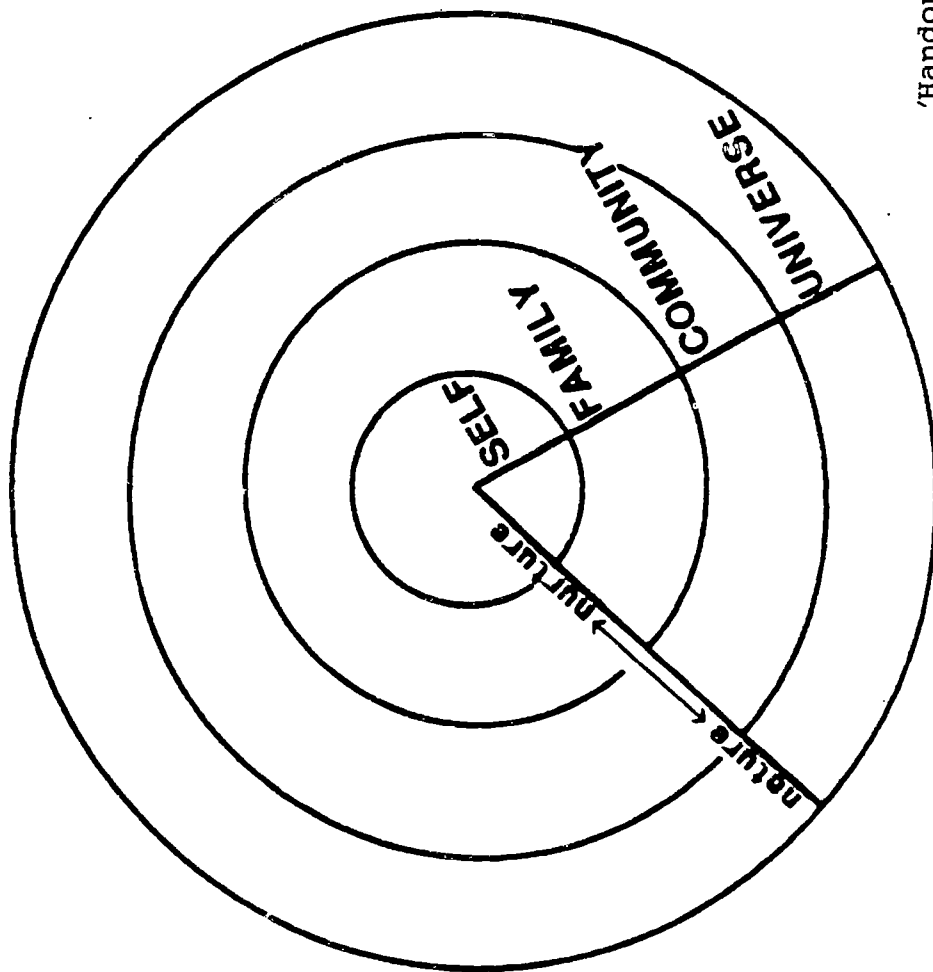
**POOR SELF IMAGE**

Handout 11

Adapted from **Acculturation, Theory, Models & Some New Findings**, by A.M. Padilla, Westview Press, Inc., Boulder, CO 1980.

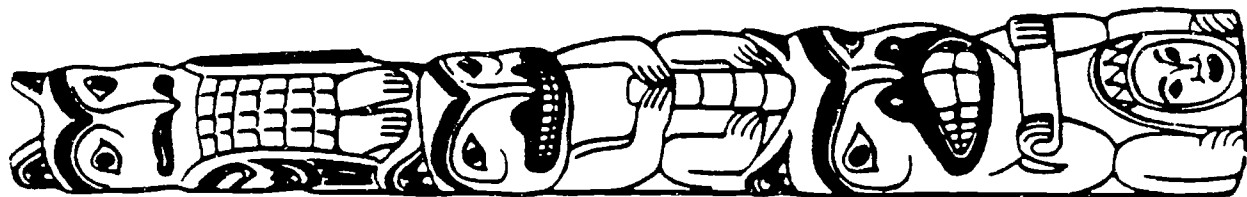


- Each person is like no other. (experiences)
- Each person is like some others. (culture/values)
- Each person is like all others. (physiology)



Handout 12

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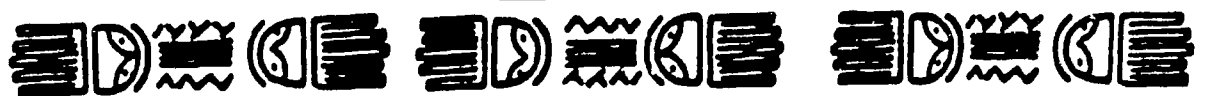


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# PERSPECTIVES OF NATURE



Handout 13



## LEARNING STYLE COMPARISON

The following are two lists of learning styles that have been compiled to illustrate some of the more common differences between the euro-ethnic culture and the American Indian culture. Keeping in mind the danger of stereotyping, the two lists of attitudes towards learning should be used as a tool for greater sensitivity to different approaches.

### TYPICAL EURO-ETHNIC CULTURE LEARNING STYLES

Well defined, organized.

Listens to explanation then learns by trial and error.

Wants teacher as consultant.

Prefers direct instruction.

Likes to try new things.

Sees time as limited.

Starts with parts, specific facts, facts, and builds toward the whole.

Insists on reason, logic, facts, causes.

Prefers public recognition and reward.

Competes for recognition.

Task oriented.

Impersonal, formal, structured.

Likes discovery approach.

Relies on language for thinking and remembering.

Likes talking and writing.

### TYPICAL AMERICAN INDIAN LEARNING STYLES

Informal atmosphere.

Observes carefully then tries when he feels secure.

Wants teacher as model.

Prefers to shown.

Like learning through stories, pictures, activities.

Sees time as infinite.

Starts with overall view, holistic, general principles.

Accepts intuition, coincidence, coincidence, feelings, emotion. hunches.

Prefers private recognition and reward.

Cooperates and assists.

Socially oriented.

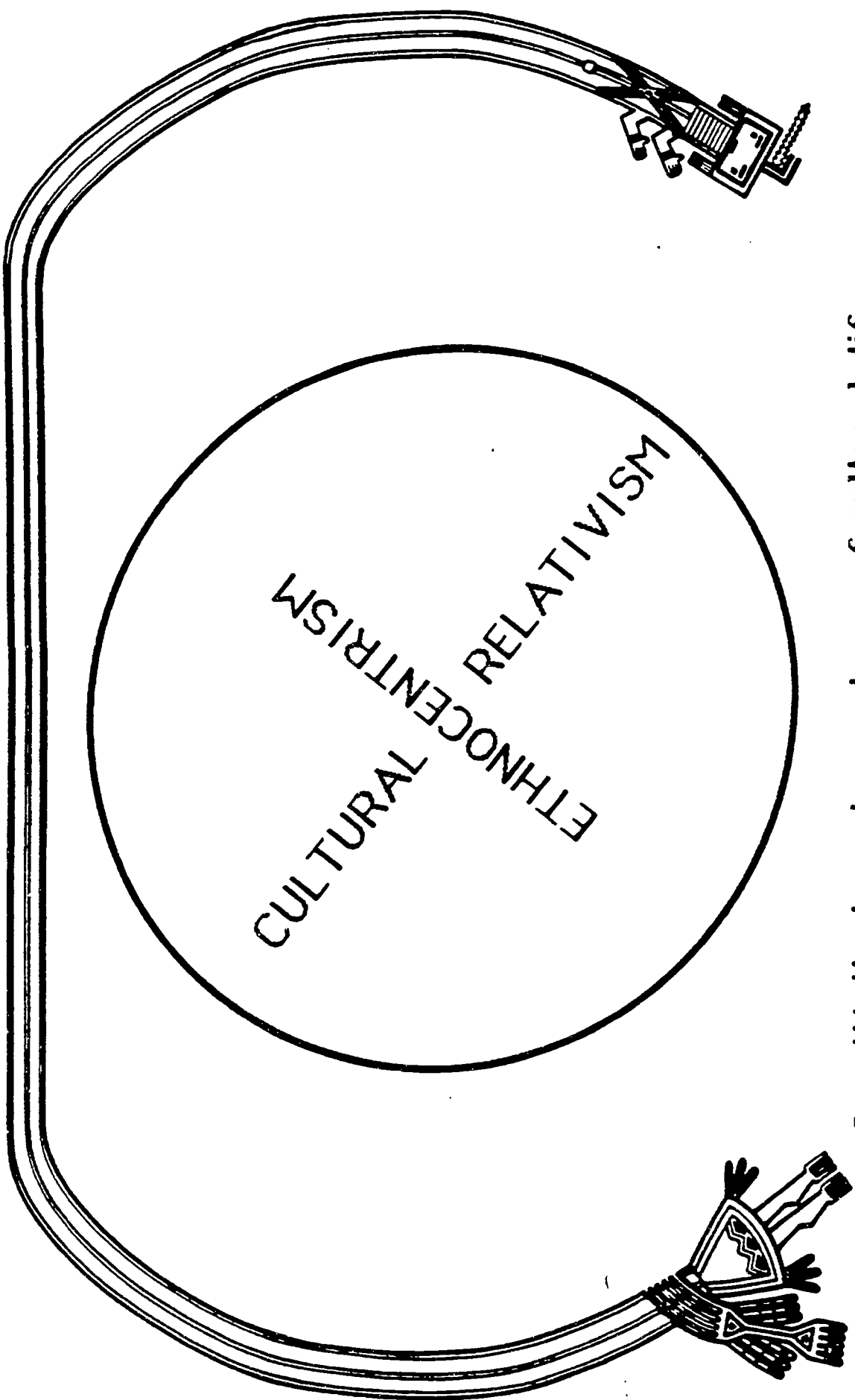
Personal, informal, spontaneous.

Likes guided approach.

Relies on images for thinking and remembering.

Likes drawing, manipulation.

Adapted from Gilliland, H. and Reyhner, J., Teaching the Native American, Kendall/Hunt Publishing, Co., 1988, p. 54. and Nazzaro, J.N., Culturally Diverse Exceptional Children in School., 1981.



CULTURAL ETHNOCENTRISM  
RELATIVISM

Sensitivity to and acceptance of cultural difference can be combined with a sense of pride in one's own heritage. These two concepts strengthen each other. When there is one without the other, there is lack of balance.

## **Cultural Relativism**

by Elmer S. Miller

Cultural Relativism: the attempt to understand and evaluate each cultural system in terms of its own internally consistent logic. Before the need for relativism was recognized, visitors to cannibalistic tribes, for instance, were appalled at their "immoral" practices. They were judging cannibals by their own society's moral code, by which it is unthinkable to eat human flesh. But later anthropologists made an effort to be less culturally subjective in their observations. They tried, for instance, to accept the fact that some cultures consider cannibalism acceptable behavior. Instead of condemning it, they tried to determine what functions cannibalism serves for the groups that practice it. Ethnocentrism -- the tendency to judge other cultures by the standards of one's own culture -- became the devil to exorcise in every introductory anthropology course.

By the middle of this century, however, it became apparent that anthropologists could not completely free themselves from ethnocentrism. No matter how much they tried to immerse themselves in other cultures in order to understand them better, they were inevitably influenced to some extent by their own society's ways of looking at things. A certain amount of ethnocentrism seemed to be essential to the functioning of any social system, including their own. And in trying to explain their experiences to those back home, they found that they were obliged to translate them into terms which had significance in their own culture. Having to do so destroys the efforts to treat cultural systems in their own terms. Thus, anthropologists continually search for the most appropriate method of translating what they know about a culture into concepts that are meaningful in their own. Only by doing so are they able to offer insights into the operation of our own cultural system.

Another difficulty, which is potentially very serious, is that by attempting to explain objectively the function of practices which seem inhumane to us, anthropologists may seem to be approving them. Infanticide, for instance, can be explained in terms of its biological and social functions. To condemn the practice would require the kind of value judgment that anthropologists have long avoided. However, some anthropologists feel that they must make it clear where they stand on such matters. The question of how to do so without sacrificing relativism is a critical dilemma which anthropology has not yet resolved.

Reprinted from **Introduction to Cultural Anthropology**, by Elmer S. Miller, Prentice-Hall, Inc. copyright 1979.

Handout 16

## Teaching Children Science:

### An Inquiry Approach

Man's mastery of nature, imperfect though it is, did not arise out of the magical incantations of primitive medicine men, but out of man's endeavor to understand the order of nature. Power over nature has come from this understanding and, therefore, ordered knowledge is one goal of the scientist. In its way magic was an attempt to understand and manipulate the order of nature, but because magic was subjective and animistic, it was irrelevant to the world and failed to give man the control he sought.

From Teaching Children Science: An Inquiry Approach by Louis I. Kuslan and A. Harris Stone.

Handout 17

## AXIOMS ABOUT CURRENT PARADIGM AND EMERGING PARADIGM

Axioms About	Current Paradigm	Emerging Paradigm
The nature of reality	Reality is single, tangible, & fragmentable	Realities are multiple, constructed and wholistic
The relationship of knower to known	Knower and known are independent, a dualism	Knower and known are interactive, inseparable
The possibility of generalization	Time- and context-free generalizations (nomothetic statements) are possible	Only time- and context-bound working hypotheses (idiographic statements) are possible
The possibility of causal linkages	There are real causes, temporally precedent to or simultaneous with their effects	Reality is mutually shaped by dynamic forces; antecedent and consequences are not distinguishable
The role of values	Inquiry is value-free	Inquiry is value-bound

(Adapted from Lincoln & Guba, 1985, pg. 37)

Handout 18



## Hopi Creation Story The Four Worlds

It is said that no part of the vast arid plateau embracing parts of New Mexico, Arizona, Colorado, and Utah is more inhospitable than the Hopi Reservation of just over 4,000 square miles, itself completely surrounded by 25,000 square miles of the Navajo Reservation. From their homes, tenders of gardens, mostly corn and squash, may have to walk as many as ten miles to their site. For centuries, women have balanced jars of water on their heads as they climb the steep cliff sides.

This is the Hopi homeland, where they have been since the beginning, having migrated there from four previous worlds. Here is the story of creation according to the Hopi, the beginning of the Hopi, and their migration to the fourth world in which they, and we, now live.

At first, there was only Taiowa, the Creator. Then, from Tokpela, Endless Space, Taiowa created So'tuknang, the Nephew, and charged him with making order of the nine universes. This he did, arranging one for Taiowa and one for himself, and seven for the life to come. So'tuknang then divided the waters equally on the universes so that half was water and he also placed the forces of air in ordered movement around each universe.

After this was done, Taiowa was pleased and asked for the creation of life to complete the last four parts, Tu'waquachi of the universal plan. Therefore, So'tuknang went to the First World whose direction is West and whose color is yellow and created her who would remain on that world as his helper, Ko'kyangwu'ti, Spider Woman.

Spider Woman, who is the weaver and guardian of all life, including that of humans, created of tu'chvala (saliva), the twins Po:qa'nghoya and Palo:ngawhoya whose duties were to solidify the planet, to assure the rotation of the earth on its axis, and to set its vibrations to echo that of the creator. Everything was tuned to the Creator's sounds.

Spider Woman then created all planet beings and all animal beings and, then, of the four colors of the earth -- yellow, red, white, and black - she created beings which passed through the three phases or lights of the dawn of Creation. When humans were fully formed, she faced them to the sun. "This is your Father, the Creator," she said. "You must remember and observe the three lights of your creation, the dark purple, the yellow, and the red. For in these lights were the mystery, the breath of life, and the warmth of love."

Ko'kyangwu'ti then called for So'tuknang to give the beings speech, and wisdom and power to reproduce. And they began to do this, knowing all the while, that the earth was living like themselves. She was their mother, they were made from her flesh and they suckled at her breast. They knew that their bodies were of the same structure and function as their mother's body, constructed with an axis, five vibratory centers, entrances for life to enter the body (the ko'pavi - soft spot on the head), and later to exit the body, and a brain to carry out the plan of Creation. And also they knew that corn was living as they were living and corn built her flesh into theirs; thus they knew that corn was also their mother.

Of their father, they knew he was the sun but he was also greater than the Sun, looking through the face of the Sun, Taiowa, the Creator.

The first people understood the mystery of their parenthood. They knew that they were members of an earthly family and tribal clan, and that they were citizens of a great universe.

They were one, human beings and animals, corn, plants, and the earth. But soon the First People forgot, and when Lavai'hoya, the Talker, came in the form of a bird, it was easy for him to convince the human beings of the differences among them. The animals drew away in fear as people also divided and drew away from one another. They became suspicious, and even fierce and fought with each other. There was no rest and no peace.

So came So'tuknang with the sound of a mighty wind announcing the displeasure of Taiowa and Taiowa's plan to destroy the world. So'tuknang spoke to those who had been chosen because they had lived by the law and told them to follow their inner wisdom and the lead of their own ko'pavi (vibratory center on top of their head). In this way, the believers were lead to a big mound where the Ant People lived. So'tuknang sent the people into the Ant kiva for safety and to learn the industriousness of the ants while he destroyed with fire, the First World.

From the womb of the earth where they had safely lived while the earth was purified by fire and cooled they emerged. Although the people felt close to him, So'tuknang had changed everything around, putting earth where there had been water, and water where land had been, so that they would have nothing to remind them of the previous world before he called the people into the Second World, whose direction is South and whose color is blue.

The people were separated from the animals who were wild and apart, and, soon, they began to separate from each other as well. They began to quarrel, to want more of what others had, and the wars between the villages began, and, on the report of Spider Woman that the Spider Clan leaders had led the people in the wrong way, So'tuknang came again to destroy the world.

Again those who obeyed the law were led safely into the Ant People's underground world. There the chosen people waited as the twins made by Spider Woman were commanded to leave their posts and their earth, with no one to control it, teetered off balance, spun around crazily, and rolled over twice. The whole geography was thrown about and the whole thing froze into solid ice ending the Second World.

Underground, the chosen people shared with the Ant People in a warm place. They wove sashes and blankets together and told many stories until the twins were ordered again to their stations at the two poles. The earth shuddered, ice splintered, and the planet began to rotate again. When it warmed to life, the people climbed up the ladder of the Ant Kiva, through the n'uta-opening and into the Third World of Kuskurza, whose direction is East, and whose color is red.

In the First World, the people had lived simply with the animals; in the Second World they had developed handcrafts, homes, and villages. In the Third World, they multiplied so much that they created big cities, and again, more and more of them became occupied with their own earthly plans and fewer and fewer conformed to the plan of the Creator and fewer sang praises to Taiowa. Under the leadership of the bow Clan, they began to use their creative powers in evil and destructive ways. Sadly, So'tuknang came to Spider Woman and said, "There is no use waiting until the thread has run out for this world. We will help the chosen ones and then I will destroy the world with water."

Waves higher than the mountains rolled in upon the land. Continents broke apart and sank. But the people were sealed up in hollow reeds with huru'suki (white cornmeal dough), and, though they felt themselves tossed about, they were safe and had food.

When the movement ceased, Spider Woman pulled each one out from the reed by the top of his or her head and brought out the huru'suki which had not been diminished by the eating. From the reeds, they made rafts for one family or more, and they traveled east and north looking for the Fourth World. They were reminded that their inner wisdom would guide them, that the "door at the top of their heads was open." This they trusted, and on a gentle current, were guided to the Fourth World, Tu'wagachi, World Complete, whose direction is North, and whose color is yellowish white.

The Fourth World is not so beautiful as the previous three. It has height and depth, heat and cold, beauty and barrenness. From these, human beings must choose whether they will follow the plan of Creation or be also destroyed again. To help the humans, So'tuknang left Ma'saw, the caretaker and guardian and protector of the land, and told them that each group would have to follow their stars to the place where they would settle. All of the people went on migrations to the ends of the earth and back to carry out the plan of Creation from this Place of Begining to the present time.

## Preparing For A Sing

One of the grandmothers who lived near Nazlini was ill. I came early for the healing Sing in order to visit the families of two of my students. The grandfathers who were going to kill the goat invited me to observe them. The goat was to be used during the sing.

One grandfather held the goat to himself while he sang a chant very softly. He knelt down and drew the goat's head onto his lap while he continued the chant. There was a large bowl near him which he placed between his knees.

While he continued his song he slit the neck of the goat. The goat was still as Grandfather took his life.

The blood was drained into the bowl and saved. The second grandfather helped with the rest of the butchering. Both men worked silently showing honor and respect. They quickly skinned the goat by cutting along the belly and down and around each leg. This enabled them to take the skin off in one piece which was dried and used as a rug.

They separated each part and organ of the goat: legs, head, ribs, backbone, hips, shoulders, heart, liver, intestines, stomach, integument. The bile glands and bladder were the only parts not used in some way. These were carefully removed and kept separate from the rest of the goat. Grandfather told me that if these were ruptured, the bile would spoil everything it touched.

The stomach, intestines, and blood were used to make sausage and pudding, the organs were grilled, and the integument and tripe were used as a tasty accompaniment to the liver. The ribs and legs were grilled and the neck and backbone went into the stew. The head was baked as a special treat. Everything was used to create a fantastic medley of food for all the people who were participating in the sing for Grandmother.

As told by Catherine Collier, a visitor to Nazlini.

## Evaluation Form - Participant

Name of Unit: \_\_\_\_\_

Date of Training: \_\_\_\_\_ Location of Training \_\_\_\_\_

Instructions: Please complete this form and turn in to the trainer after completion of the training session

	strongly disagree		no opinion		strongly agree	<u>comments</u>
1. The Participant Booklet was useful to me during the training	1	2	3	4	5	
2. The content in the Participant Booklet was easy to understand	1	2	3	4	5	
3. The activities and examples in the training were relevant to my current job situation	1	2	3	4	5	
4. The questions in the Participant Booklet helped me to understand the material	1	2	3	4	5	
5. The classroom application ideas and activities in the Participant Booklet can easily be adapted and used in my classroom situation	1	2	3	4	5	
6. I learned a lot in this training	1	2	3	4	5	
7. The strengths of the training are:						
8. Recommended improvements for the training are:						
9. Recommended improvements for the Participant Booklet are:						
10. Additional Comments (use back if necessary):						

## A I S E S

The American Indian Science & Engineering Society (AISES) is a nonprofit organization dedicated to helping American Indians seek self-reliance through careers in science and technology and to developing technologically-informed leaders for the tribal community. Founded in 1977, AISES now has more than 1,100 professional and student members from 141 tribes. AISES programs include teacher training, math and science camps, curriculum development, scholarships, campus chapters, community education, corporate mentoring partnerships and other activities which enable American Indians to enter math and science-based careers, and to serve the technological concerns of tribal nations.



AMERICAN INDIAN  
SCIENCE & ENGINEERING SOCIETY  
1085 14th Street, Suite 1506  
Boulder, Colorado 80302  
(303) 492-8658